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## FORTY YEARS OF FARM COST ACCOUNTING RECORDS

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PAST history does not reveal to us the origin of the desire for knowledge about farm costs. Casual reference to farm costs and the desirability of accurate records of costs are found scattered through agricultural literature from the time of the Romans to the middle of the nineteenth century. None of these references, however, indicate carefully recorded data on costs or a comprehension of suitable methods of attack on that subject.

Following the establishment of agricultural colleges in America and more particularly the organization of experiment stations in connection with colleges, during the decade 1880 to 1890 more active interest in the subject is indicated. Weston of Illinois (Bulletin 50, page 55) refers to a report of the United States Commissioner of Agriculture in 1870 which contains a statement by a Mr. J. T. Burroughs concerning the cost of growing crops in Madison County, Illinois. He also refers to inquiries concerning the cost of producing corn and oats in Illinois in 1885, 1886 and 1887 as reported by the Illinois State Board of Agriculture for 1886 and 1887. Tables of yields and costs were published by the Board for all counties of the state indicating the estimated yield, acreage, price per bushel, value of crop, cost of production and profit or loss on the crop. He states also that the United States Department of Agriculture in 1893 in response to numerous inquiries relative to the cost of raising the principal cereals, circulated a questionnaire among 28,000 practical farmers asking for estimates of the cost of raising corn and oats. These estimates were compared with replies to the same questionnaire by 4,000 graduates of various agricultural colleges who were engaged in farming.

The demand for information about the cost of

farm crops appears to have been stimulated by the long period of low prices and small farm profits prevailing during the period 1880 to 1895. This demand was reflected in certain desultory studies made at a few of the experiment stations then but recently organized. So far as published results tell us, there seems to have been no connection between these studies at different experiment stations though it is quite possible that the college and station men attacking the problem may have discussed the desirability of such an investigation and followed up with independent action.

Curtis and Carson of Texas undertook to determine the cost of cotton production and profit per acre. The attack on the problem was made by circular letter and questionnaire sent to growers in various parts of the cotton growing area of the state, asking for a report on the total cost of producing a bale of cotton with certain other information about the method of planting, fertilizing and growing the crop. The replies received from six or eight farmers giving some data and some estimates on the cost of their operations in cotton growing were published in March 1893.<sup>1</sup> The information obtained was not conclusive and proved to be of little value. It does indicate, however, an interest in the cost of producing cotton and probably prompted thought on the matter of cost accounting.

Another instance of the same kind is recorded from Nebraska where Ingersoll and Perin undertook a study of the cost of farm crops and particularly of corn, hay, wheat, oats and barley. These studies were conducted on the college farm for the purpose of determining the profit on the various crops. The conclusion was reached that profits were determined by two factors: (1) keeping cost of production low, and (2) the market price prevailing for the product. The results of this study were published in April, 1893.<sup>2</sup>

Buffum of Wyoming reports in March, 1894, in a bulletin from the Wyoming Station on the cost and profit of growing wheat.<sup>3</sup> His studies, like the others, were of value only as stimulating interest in the subject and as stepping stones in the further development of methods.

During this time, W. M. Hays of Minnesota, a colleague of the

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<sup>1</sup> Curtis, G. W., and J. W. Carson, Cost of Cotton Production and Profit per Acre, Texas Agri. Exp. Stat. Bull. 26.

<sup>2</sup> Ingersoll, C. L., and S. W. Perin, The Cost of Farm Crops, Nebr. Agri. Exp. Stat. Bull. 29.

<sup>3</sup> Buffum, B. C., Cost and Profit of Growing Wheat, Wyoming Agri. Expt. Stat. Bull. 17.

above named workers in experiment station work and who often met them in national gatherings, was called from Minnesota to North Dakota in the fall of 1891 to organize the agricultural department of the North Dakota Experiment Station. In mapping the farm and laying out the experimental grounds, he provided for crop rotation trials on a scale that would give an opportunity for recording cost and studying the profits made from growing various of the cereal crops. Hays remained at North Dakota only a year and a half and returned to Minnesota before data were available for publication.

One of the best attempts in pioneering studies of farm production costs was made by Weston of Illinois under the supervision of David L. Kinley in 1896. As with the earlier studies, this was also made by resorting to the questionnaire method. The form of the questionnaire, however, was more carefully set up and better organized for comparable results. The questionnaires were sent to practical farmers and called for data on actual expenditures on the crops rather than for estimates of expense. Wherever possible, records were obtained of days of labor required for the operations in growing the crops together with the rates per day or per hour for men and teams used. From these data, costs were calculated for the corn and oat crops. The results of this study were published in February, 1898.<sup>4</sup>

One can only speculate on the incidence of these studies. It seems reasonable to suppose, however, that they grew out of the economic distress that prevailed among farmers at that time and that they were the results of the attempts of experiment station men and college men to find a solution of the farmers' problems by discovering for them which of the crops it was most profitable to grow. These investigators were all college trained men who were groping for methods of improving the financial position of farmers. While none of these investigations proved of value in themselves, they did serve as thought stimulators and stepping stones to more effective attacks on the problem later.

#### *Organized Cost of Production Studies*

When W. M. Hays returned to Minnesota from North Dakota in the fall of 1893, he brought with him the idea of studying the cost

<sup>4</sup> Weston, N. A., The Cost of Production of Corn and Oats in Illinois in 1896, Illinois Agri. Expt. Stat. Bull. 50.

of production of crops in connection with crop rotation studies to be made at the experiment station farm. During the winter of 1893-'94, Hays in collaboration with Andrew Boss, then Assistant Agriculturist of the Minnesota Station, perfected a plan for a group of forty-four one-tenth acre rotation plots on the station farm which were to serve as a basis for discovering the best paying systems of crop rotation and, at the same time, for studying the effect of the various rotations on soil fertility. These forty-four plots contained rotations running from continuous cropping through the two, three, four, five and seven year rotation cycles. Plans for prosecuting the investigations called for sampling the soil at the surface and subsurface of each plot when the investigation was initiated and at five year periods throughout the life of the investigation. Records were to be kept of the time required for the various operations in connection with each phase of crop production and of the costs of seeds and material used. At the end of the first five-year period, the conclusion was reached that this study was abortive and that it would not yield the desired information on the cost of crop production. The records of time employed in the crop production operations were overshadowed by overhead expense and by gaps in the process of raising the crops and finding a market for the products. A discovery was made which should have been apparent from the start that there was no market for pasture, except through livestock and no provision could be made for determining from the one-tenth acre plots the returns from the land as measured in livestock products. While these rotation plots served a useful purpose in studying the effect of rotation on the land, they proved to be entirely useless as a base for measuring relative costs of production. (For a discussion of this investigation, see Minnesota Bulletin 125.)

During the years 1894-99 and in connection with the work on rotation plots, Hays and Boss were developing courses of instruction in farm development and in farm crops to be taught in the School of Agriculture to young men from the farms of the state and who were expecting to return to farming. Here again the need was felt for information about relative profits on crops usually grown on Minnesota farms as affecting the returns to the farm as a whole. The desire was to find the crop or crops that could be most profitably grown and combined in rotations on the farms operated by the families of the students in the classes. Attempts to use the information gained from the rotation plots at the station farm gave lit-

tle satisfaction. Knowing that few farmers kept records of any kind in their farming operations, it seemed unwise to attempt to gain information through the questionnaire method which had been tried in certain instances as described above. The conclusion was reached that if results of value were to be obtained concerning the cost of producing farm crops, the basic data for analyzing the problem and setting up sound farm management practices must be obtained directly from the farmers. Hays and Boss then set about the task of developing a method of getting such data from the farmers and of recording and analyzing the data. The next two years were spent in planning the attack and in finding financial support for what proved to be the first organized attempt to learn the relative costs of producing various farm crops.<sup>5</sup>

### *Statistical Routes Organized*

During the summer of 1901, Hays, who was a traveling missionary for the cause, had interested Victor H. Olmsted, Chief of the Bureau of Statistics, U.S.D.A. at Washington in an investigation of the costs of producing crops. W. J. Spillman, at the time Agrostologist in the Bureau of Plant Industry, with whom Hays had a mutual interest in grass breeding research, expressed an interest in this new attack on farm management research and became an earnest supporter of Hays in his quest for financial aid and a co-operator in developing this field of work. With assured assistance from the Bureau of Statistics, Hays and Boss decided to establish so-called statistical routes at three points in the state where farm cost data would be recorded from farms in active operation by farmers. In September of that year, they set out by team and platform spring wagon for Northfield, forty miles away in the heart of a good dairy farming area to solicit cooperation of farmers in providing reports of the daily transactions and activities connected with crop growing on their farms. The objective was to find fifteen farmers who would willingly report the details of every labor activity on the farm connected with crop growing and the details of financial transactions in connection with their production. Four days were required to complete the mission. Something over fifty farmers were interviewed before fifteen cooperators were found within what was considered to be a reasonable limit for a day's drive for a route man

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<sup>5</sup> See Minn. Agri. Exp. Stat. Bull. 97 and 125.



with horse and buggy. The plan of investigation called for placing a route man on the job who would visit each farm daily to pick up recorded reports or to interview the farmers and record data which were not readily available. Farmers at the time knew little about the experiment station and many of them were reluctant to give the details of their business transactions for fear that the information would be used in raising their taxes or to their disadvantage in some other respect. The solicitors were advised by numerous of the farmers interviewed that they "needed no advice from white collared representatives of the experiment station or the University; that they were perfectly capable of running their own business and did not intend to tell anyone what they were doing." However, fifteen willing cooperators were found on a route of some ten or twelve miles in length which was regarded as a suitable day's travel for the route statistician, with horse and buggy. Arrangements were made to initiate the work on January 1, 1902.

A similar expedition was made by Hays in the vicinity of Marshall in Lyon County to find cooperators at that point. The agriculture of Lyon County at that time was thought to represent a diversified farming area. Another route was established at Halstad, Minnesota in the Red River Valley which, at that time, represented a highly specialized crop production area with wheat the leading crop. The thought was that from the route at Northfield in Rice County representing the dairy type of farming, the one at Marshall, Lyon County, representing diversified farming and the one at Halstad in Norman County representing grain farming, data would be secured from which there would be no difficulty in telling what types of farming would be most suitable and most profitable in any part of the state.

On January 1, 1902, the Minnesota Agricultural Experiment Station in cooperation with the Bureau of Statistics of the United States Department of Agriculture began gathering data on the established routes. The work was directed entirely from the Minnesota Station with the expense being divided about equally between the Station and the Bureau of Statistics. Three young men who had been college students at Minnesota took leaves of absence from their college work to become route statisticians and gather the data from the fifteen farmers on each route who had been selected as farm cooperators. These cooperators had agreed to be interviewed daily throughout the entire year by the route statisticians and to

give a record of each hour of labor performed by each man, boy and horse on the farm. They were also to record the field or crop or other enterprise upon which the labor was used. The route man, together with the farmer, was to map the farm giving accurate measurements of each field so that the data collected might be so classified as to show the yields and cost per acre of each crop on each farm and also to permit calculation of an average for the routes from which an estimate could be made of the cost in other parts of the state. As might well have been suspected, some weaknesses were found in the procedure. The first two years were, in large measure, experimental. Methods and forms for recording the data had to be devised and the difficult problems of finding the exact rate of wages per hour for men and horses were not well worked out until about the end of the second year. However, the results obtained during these experimental years were accurate enough and valuable enough to be included in the data finally accumulated, analyzed and published as giving the cost of production on Minnesota farms.<sup>6</sup>

#### *Changes Made in Plan of Attack*

In 1904, a change was made in recording the data from these groups of farms. Up to that time the route statistician had made headquarters at one farm and drove the route daily just as a postman would do in delivering the mail. On these daily trips, the route man picked up certain records made out by the farm family and interviewed the farmer and recorded other data needed to complete the record of the day's activities. He spent evenings in perfecting the office records and posting the data. A preliminary examination of the data secured showed that a large part of the products of the farms did not reach market in the original form but were converted through the medium of livestock. This drove home the necessity for expanding the records to include all livestock operations and records of the general and personal expense of the family. The new plan called for the route statistician recording accurately the amount of the various feeds fed to the several classes of farm animals and the amount of milk, the number of eggs or the quantity of other products actually produced. To satisfactorily accomplish the required duties, it became necessary to limit the number of farms on each route to eight and to require the route man to spend

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<sup>6</sup> Hays, W. M., and E. C. Parker, *The Cost of Producing Farm Products*. Minnesota Agri. Exp. Stat. Bull. 97.

three days per month at each farm. Headquarters were made, as before, at one farm where the records were accumulated, posted and compiled. These duties were accomplished by the route man on the two or three remaining working days of the month but often required Sunday work as well to keep the records current.

On these three day stops at each farm, the route man was required to get out for morning chores when the farmers did to check the weights of feeds, measured out to each class of animals. He was also to check the weights of the milk from the individual cows and secure a sample for the butterfat test. During the day, other weights or measurements were taken and a record made of the daily transactions on that farm. At the night chore time, feeds and products were again checked out to complete the day's record. On most of the farms, some member of the household was commissioned and later paid a small sum to record the household and personal expense of the family. This included a record of farm produce used in the house and of products bought and sold. This plan for securing data of the entire farm business proved to be much more satisfactory and productive of information than the plan followed during the first two years.

Since the route man was required to assist the farmer in making a map of the farm, measure the fields and record the original data, it was found that his time was so fully occupied that he could no longer compile the data. It became necessary, therefore, to establish a statistical office at the Agricultural Experiment Station at St. Paul and mail in the data as secured for posting and analysis. The leaders of the project made frequent visits to the field headquarters and kept in touch with the farmers on the route with a view to securing and maintaining their interest and active cooperation. In return for the labor and time contributed by the farmers in securing the data, they were given each year and frequently oftener, a summary of the results to date on their farms. The effect of this kind of cooperation soon became evident and the farmers began voluntarily to improve their methods as they discovered the weak points in their farm operations. No effort was made by the investigators to induce the farmers to change their method. Their purpose was merely to record the facts concerning the daily farm operation as they occurred.

No attempt was made to draw conclusions or to publish results until the investigation had been under way for a full four year

period. The first year's results particularly were not complete and could not be fully utilized. With records gained in the three succeeding years, however, compilations were completed and published in 1906 as Bulletin 97 of the Minnesota Experiment Station and simultaneously as Bulletin Number 48 of the Bureau of Statistics, United States Department of Agriculture. With the publication of those bulletins, the field method of securing data on the cost of producing farm crops was considered to be well standardized and satisfactory and, with modification, has been in continual operation at Minnesota since that time.

### *The Objectives of the Study*

In the interim between the time cost accounting studies were initiated and the present, question has frequently been raised about the value of such accounts and the purposes for which they can be used. To make clear the viewpoint of the initiators of this type of farm management research, it may be well to reproduce the summary of objectives as made at the time of the first publication of results in 1906.<sup>7</sup>

### *"Summary of Objects and Results"*

#### *"Objects sought in collecting statistics of the business of farming."*

1. "To aid in making a study of the business of the farm that it may be systematically conducted under the best possible plans.
2. To supply many averages which the farmer rarely secures from his own business, as cost per acre of various labor operations, and cost of producing field crop products and livestock products.
3. To determine the cost per hour of man labor and horse labor on farms.
4. To determine the yearly values consumed in farm machinery, and the values consumed per acre for the various farm crops.
5. To collect data on the feeding of farm animals as actually carried out and make comparisons of methods.
6. To secure practical data concerning the profits from the different farm animals, and to devise simple methods of making records which will determine the value of each individual animal as a producer, and the breeding value of the blood of each animal used as a breeder.
7. To keep the performance records of dairy cows, and show reasons for profit and loss on the individual animals.
8. To secure the data necessary to supplement the records of experiments in crop rotations made by experiment stations, that the net profits from the various rotations may be compared.

<sup>7</sup> Op. cit.

9. To determine and compare the net profits in various systems of present day agriculture.

10. To assist the farmer to so organize his business that such arrangement of crops and livestock may be made as will give the largest net returns.

11. To collect maps of actual surveys from many farms to be used in working out examples of reorganized field plans with systematic crop rotations.

12. To assist in inaugurating simple systems of accounts for the farm business and the farm household.

13. To secure data concerning the farm home, as the cost of living, the value of foods grown on the farm, and the cost of boarding hired help.

14. To provide practical data to be used in schools, as consolidated rural schools, agricultural high schools, and agricultural colleges, in teaching the facts and principles of farm management.

15. To aid in developing a literature on farm management, and a class of effective teachers, editors, and general writers; and to assist in overcoming the indifference to antiquated methods in farm management."

A study of these objectives will reveal the fact that the effort was not made to find costs for costs' sake or with the expectation of determining an exact cost to be used in price making. Rather the objective was to secure basic data at first hand that could be used in determining which crops under certain conditions gave the greatest net profits when grown for market and which crops could best be worked into farm crop rotations that, over a period of years, would yield the best returns to the farmer. Item 10 of the summary brings out this thought clearly. The whole enterprise was aimed at better farm organization, improved farm operation and the development of information that would be useful in teaching school and college classes in farm management and to build up literature on farm management.

The publication above referred to contained analysis of the field data gathered during the years 1902, 1903 and 1904. The investigators recognized the fact that records kept on a farm business for any one year would not give a fair measure of the results achieved. By recording the data for three years and making comparable averages, a much safer basis of estimates and calculations was provided. The policy, therefore, was adopted of publishing nothing short of three year averages and of making the term longer when that could be done. The route established at Northfield was continued for a period of eleven consecutive years, some of the farmers remaining on the route and reporting the results from their farms for the full

eleven year period. The route was maintained at Marshall for a period of nine years and at Halstad for sixteen years. Later the policy was adopted of moving from place to place in the state for records from specific types of farming over periods of three to five years.

### *Expansion of Cost Accounting Research*

Emphasis on the study of farm costs were greatly stimulated when W. M. Hays, the leader of the project, became Assistant Secretary of Agriculture in 1905 and located in Washington, D.C. With Hays in Washington, the cost accounting investigations in Minnesota were continued under the supervision of Boss with E. C. Parker, who had served as the first route statistician at Northfield, taking over active leadership of the project. He served from 1905-1908 and was followed by T. P. Cooper, now Dean and Director of the Kentucky Agricultural College and Station, who served from 1908 to 1912. He was followed in 1912 by F. W. Peck, 1912-1918, after which time G. A. Pond took over the leadership and has continued to pursue investigations in this field to the present. At Washington, Hays continued co-operation with Olmstead, of the Bureau of Statistics, and with Spillman, Agrostologist in the Bureau of Plant Industry, who had been put in charge of farm management in 1902, when an Office of Farm Management was informally established in the Bureau of Plant Industry. On July 1, 1905, the Office of Farm Management was formally recognized. The Office was located in the Bureau of Plant Industry, and Spillman, under the title of Agriculturist, was put in charge. In 1908, the cost accounting research of the Bureau of Statistics was transferred to the Office of Farm Management.

Hays and Spillman, with the support of Olmsted, then undertook to enlist the interest of workers at various state stations and with some success. Among others contacted was Dr. H. C. Taylor, Agricultural Economist at the Wisconsin Experiment Station. He became interested in the project and in 1909 entered into a cooperative agreement with the Office of Farm Management for the operation of a farm cost accounting project in Wisconsin, using an individual farm reporting system rather than the route system as employed in Minnesota. Under the individual farm system, daily records from a number of farms were sent into the station office for compilation and analysis. Specialists from the station visited the

farms from time to time and made surveys and measurements of the farms reporting. These studies were pursued until 1919 when they were discontinued because of Taylor's transfer to the Office of Farm Management in the United States Department of Agriculture.

Under the leadership of Warren and Thompson, who, up to that time, had specialized in farm management surveys as a means of analyzing a farm business, Cornell University in 1911 began the study of farm costs under a record book system. These record books were used by farmers as journals in which to register the daily operations and transactions on their individual farms. The record books were summarized and analyzed by workers at the experiment station at the close of the calendar year. These studies have been continued consistently up to the present time with sixty to eighty-five farm records tabulated and analyzed annually.

In 1912, the Illinois Agricultural Experiment Station, under the leadership of W. F. Handschin who had worked in the cost accounting office in Minnesota with Cooper, established a cost accounting route among the farmers of Illinois for the express purpose of studying the economics of livestock production. In Illinois, as in Minnesota, records were obtained by a route man who visited the farms of cooperators frequently to assist in accumulating the data and supervising the records. The number of farms from which records were obtained varied from ten or twelve in each area in the early stages of the study to thirty or more in later years when the farmers had become familiar with the form of the records and when transportation facilities were more rapid than in the early days. Illinois is still continuing the studies of farm costs.

Following the attachment of the Farm Management Office to the Secretary's Office of 1915, Spillman and E. R. Thompson of Cornell University, who had joined Spillman's staff, succeeded in interesting a number of states in farm cost accounting.

The reorganization of the Office of Farm Management in 1919 under the administration of H. C. Taylor was followed by an upsurge in cost accounting studies. F. W. Peck of Minnesota was called to Washington to take charge of the Division of Farm Management and Costs in the Bureau. Under his leadership and with the support of Dr. Taylor, a peak was reached in farm cost accounting during the years 1919-1923. Additional states initiating farm cost accounting studies were North Carolina, Georgia, Ohio, Colorado, Iowa, Kansas, Montana, North Dakota and South Dakota.

The writer has made no attempt to analyze or report the findings of the studies made in these states.

### *Evolution in Methodology*

In the initial years of farm cost studies, the emphasis was directed toward finding the costs as measured in money values. The thought was that money values would serve as a common denominator in making comparisons of cost, financial returns and profits from various crops and classes of livestock; that upon such comparisons it would be possible to set up the highest profit crop rotation combinations and the most profitable systems of farm management. Experience gained from analysis of the data recorded indicated that this measure in itself was not entirely satisfactory. Short term fluctuations in prices, variations in seasonal climatic conditions, in types of soil and in soil fertility complicated the results and made accurate interpretation difficult and unsatisfactory. It was found that the money cost measure, even when averaged out over a three or five year period, did not give a satisfactory base from which to project a good program of farm operation.

In the search for satisfactory measures of costs, emphasis was turned toward determining the physical factors of cost entering into the making of crop and livestock products and encountered in farm operation and management. It was found that with records of the hours of man labor or horse work performed, the hours of machine or implement use and the physical quantities of the elements used in production one can determine on the basis of prevailing wage and price factors in any situation the costs, income and profits or loss from any farm enterprise and from the farm as a whole. Comparison on the basis of physical quantities used in production between farms of a local community and between farming areas can also be made thus spot lighting the most efficient operators and the most profitable practices in production. As research in the farm costs field was evolved, attention has been turned toward the determination of the physical quantities of labor, power and materials used in production as the factors to be used with known or estimated yields and prevailing prices in determining the costs of production in any stated situation.

### *The Place of Farm Cost Records in Farm Management Research*

It should be noted perhaps in this partial sketch that studies of the cost of producing farm products were initiated by old time gen-



eral agriculturists, agronomists and animal husbandry specialists. The approach was from the agricultural rather than from the economic viewpoint. As a matter of fact, Carver and Taylor were the only economists at the time branded with the rural or agricultural label and they were busy in outlining the field and developing the principles of agricultural economics. The agriculturists were interested in the comparative profits to be made from the different crops and classes of livestock as a basis for formulating types of rotations, and systems of farming that would yield larger returns to farmers. Warren and his associates at Cornell had much the same objectives in developing the farm management survey attack on the problems of farmers. It was not until the Office of Farm Management in Washington was well established and the agricultural economists had come in contact with the work being done in farm cost accounting that the economists became interested in this new field of research. Taylor was one of the first to turn attention to farm cost studies as has already been noted. He with workers in the Office of Farm Management did much to broaden the objectives and refine the methods of analyzing and interpreting the accumulated data. Farm cost accounting has not proved to be a popular field of research for several reasons. Farms cannot be brought into an office or laboratory to be observed under a microscope or run through a test tube or weighed on a balance or scale. They must be studied where they are. Inventory taking, field measurements and operation observations may be cold, wet jobs from which many professionally trained and softened men shrink. To properly interpret the records of a farm business, the research worker must be personally familiar with the farm, the operator and his family and with the environment surrounding the farm. The detailed records from a farm over a three or five year period become voluminous, complex and difficult of accurate interpretation. Some at least of those who have bravely started out on a study of farm cost accounting have been discouraged and overcome by the labor and mental effort involved. Farm cost accounting is an expensive form of research and results from a three to five year statistical route study come slowly. For these reasons, experiment station administrators have been reluctant or unable to provide adequate financial support for research in this field, and yet in the slightly more than forty years since systematic farm cost accounting studies were initiated, a vast amount of data has been accumulated and published which has

proved to be exceedingly valuable in laying out planned programs of agricultural production state by state and nationally under the stress of a severe agricultural depression and the current war needs.

Of the Agricultural Experiment Stations, Minnesota, Illinois and Cornell have most aggressively and constantly pursued farm cost accounting research. The Minnesota Station has a record of nineteen Experiment Station Bulletins, two Technical Bulletins, nine Extension Bulletins and sixty-eight Mimeographed Reports to its credit. Many of these are published in cooperation with the United States Department of Agriculture. During the forty year period, there has been accumulated between 1,100 and 1,200 detailed farm cost records covering 12 farming areas. Illinois, since 1912, has accumulated 850 individual detailed farm cost records. Fourteen bulletins have been published in the field of farm cost accounting together with ninety-six mimeographed reports of the results of different phases of farm cost accounting. The records have been used in various other ways for special audiences and occasions. Cornell University reports the publication of four Experiment Station Bulletins, five Extension Bulletins and fourteen preliminary or Mimeographed Reports. In addition, the data accumulated has been used in many other publications.

The United States Department of Agriculture has contributed to publications in this field more generously than is indicated by Department publications. Most of the researches by the Department have been in cooperation with state experiment stations with the publication bearing state labels with acknowledgment of the contributions of the Department. No attempt is made to inventory publications of the Department or by Experiment Stations other than those previously noted.

That farmers consider the cost accounting data to be of value to them is indicated by the fact that several cooperative farm management service associations have been organized in these states where the members pay a fee in support of a fieldman and a summarization of the yearly record by experiment station analysts. This type of service has proved to be highly useful and popular among those wishing to increase the efficiency of operation.

In addition to its use in guiding and advising farmers in their production activities, the farm cost data have been useful at these institutions in building up subject matter for courses in Farm Management in schools and colleges. The colleges in Minnesota, Illinois

and Cornell have used the results of these researches extensively and are the institutions that have attracted the largest numbers of college and graduate students training for professional work in the field of farm management.

The uses of farm cost account records are many and varied. The individual farmer may use them as (1) a means of recording from year to year the details of his farm operations as a source of reference to past practices and results. If he wishes to go further, the data recorded will enable him to determine his most profitable crop and livestock enterprises and his most efficient practices or methods of production. (2) From the record of physical quantities used in production of the commodities he produces he can make comparisons from year to year and discover trends toward or away from efficient practices and methods. (3) The data recorded will serve as a basis for making trial budgets of different combinations of his farm enterprises and forecasting probable results before settling upon his yearly production program. In this way it is possible for him to fit his program to probable labor and power supplies and to estimate in advance and provide for needed feed and material requirements. Study of the results of past operations will reveal the weak and the strong enterprises that enter into his farm organization plans and contribute to the net income. Knowledge thus gained should result in a steady improvement in efficiency of production.

In recent years, farm cost accounting data has been extensively used in connection with planned programs for agricultural production. The "physical quantity" data recorded by farm management research workers in the State Agricultural Experiment Stations and the United States Department of Agriculture have been an invaluable aid in advising desirable state and national production programs and in forecasting the various food, feed and materials likely to be needed nationally in meeting the requirements for an adequate and well balanced food supply. In states where such data are locally available, it has been useful also in setting up county production programs suited to the soil, climatic and economic limitations of the county and state.

The primary purpose of research is to obtain new knowledge. Farm cost accounting research is designed to bring into view intimate knowledge of all of the factors that enter into the organization of a farm business and the part each plays in the functioning of the farm as a whole. As the watch maker must know the place and

function of each part of the watch he is making, so the maker of a farm organization plan must know the function and value of each enterprise or factor that goes into it. The best way to acquire intimate knowledge of the parts of a farm business is to study the parts separately and in combination as they appear in different types of organization. It is in making studies of this kind that the farm cost accounting records prove their value. Through the correct use of such records, the causes of successful and profitable production and of unprofitable operations may be discovered. Knowledge thus gained will enable the operator to improve his production program to the point where low income enterprises may be reduced to a minimum and emphasis placed on the highest profit combinations of enterprises. In dissolving out of the detailed records of physical units and factors of cost accrued by the cost accounting method one is enabled to deal with causes of results rather than to measure backward from results to causes.

## FORTY YEARS OF FARM MANAGEMENT SURVEYS

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**I**T WAS about forty years ago that farm management survey work, as well as other lines of farm management research, was being initiated in the experiment stations of the United States. This was about the time when the better agricultural areas were well on their way in the shift from self-sufficient to commercial agriculture.

Although the first work in farm management surveys began about 40 years ago it may be of interest to consider some of the earlier developments which led up to this work. Before 1900, agricultural research workers all over the country were beginning to think of going to the farms for some of their information. One of these workers was L. H. Bailey of Cornell.

In a lecture before the Training Conference for Rural Leaders at Cornell University in July 1911, Bailey spoke on "The Survey Idea in Country Life Work."<sup>1</sup> In this lecture he states that the survey idea at Cornell "was really begun with a piece of work in 1890 that culminated in the publication of Bulletin 19, 'Report upon the Condition of Fruit-Growing in Western New York'."

The early development of the survey idea is well explained in Bailey's lecture as follows:

"The work in communities gradually took on larger meanings. It was desired to 'round up' an entire subject in a region, and to get its full significance. The horticultural survey work finally culminated in the excellent apple-orchard surveys of Wayne and Orleans Counties, by G. F. Warren, under the direction of Professor Craig (Bulletins 226 and 229, in 1905). I think it not too much to say that these surveys marked a departure in this kind of work, substituting the statistical method for previous means. Orchard after orchard was studied in person by Warren, and the financial and farm-management phases of the situation were reported with care; and in the Wayne survey the horticultural condition was articulated as far as possible with the geological horizon.

"Other surveys of this general character have been made, and one of them has been published, 1910, as an 'Apple Orchard Survey of Niagara County,' under the direction of Professor Craig; and a correspondence survey, under direction of Professor Warren, was published in 1909 as 'The Income of 178 New York Farms.' Other publications will follow.

"The results of the statistical work in Wayne and Orleans counties were so striking that it was then proposed to apply the method to farming in

<sup>1</sup> Bailey, L. H. *York State Rural Problems*. Volume I.

general rather than to a single crop or product. In 1906, under Professor Hunt's immediate direction, a survey was planned of Tompkins County, the seat of the New York State College of Agriculture. It was found at the close of the first season's work that it is impossible, in practice, to cover all or even a large part of the rural situation in any region by going over it once; and the Tompkins county work was narrowed to a farm-management survey,—that is, 'to find the profits for the year on each farm, and to find what conditions and types of farming result in the largest profit or labor income; in other words, to find why certain farms pay better than others.' The results of this survey, published in 1911 as Bulletin 295, under the leadership of Professor Warren, make a distinct contribution to the country-life movement; and, so far as we know, they represent the most complete census-taking of its kind that has yet been undertaken. The bulletin is a document of nearly 200 pages, replete with carefully secured and well-digested statistics and observations on the profits and losses of Tompkins county farms, with many interesting and applicable deductions. It will become a sourcebook not only for its region, but for general study of the problems involved in the business management of farms."

From the beginning, farm management surveys have been based on the idea that "every farm is an experiment station and every farmer the director thereof." If we can collect and relate the results of all the experiences and experiments we shall have valuable agricultural knowledge. The agricultural survey in its various phases is a recognition of the immense fund of information which is obtainable as a result of experience and experiments on farms. This work has very definite limitations since many new subjects have no basis of experience.

The apple-orchard surveys, and the early farm management surveys referred to by Bailey were primarily concerned with the study of relationships. In the apple-orchard surveys, practices with respect to tillage, fertilization, spraying, number of trees per acre, etc. were related to yields. In the Tompkins County farm management survey the relationship of a large number of factors to profits was studied.

The Office of Farm Management in the Bureau of Plant Industry began farm management surveys under the direction of W. J. Spillman in 1909.<sup>2</sup> This work was expanded rapidly, and farm management surveys were made in many parts of the country between 1910 and 1916. The farm business analysis technique was further developed and improved. The emphasis in the farm business anal-

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<sup>2</sup> Thompson, E. H. An Agricultural Survey of Four Townships in Southern New Hampshire. Washington: USDA. Bureau of Plant Industry Circular 75. 1911.

ysis studies was on determination of factors affecting profits on farms in the area studied.

In the early days of survey work there was much discussion as to the reliability of the results obtained. Research workers accustomed to the precision of laboratory methods had difficulty in accepting the results of surveys when they knew that the original records contained many estimates. In the early literature we find considerable reference to the question of the validity of the survey method.<sup>3</sup> During the last 20 years relatively little has been said on this question. Experience has indicated that while the results may not have the mathematical precision required by a laboratory technician, they are sufficiently accurate to lead to accurate conclusions. The survey method has come to be generally used in the whole field of Social Studies, in which the only source of original data is the experience of people. We cannot put people in test-tubes and see how they react. We must wait until they run their own experiments and then collect and analyze their results. In the farm management field, the survey method has been used successfully in many countries, and under a wide variety of conditions, even where most of the farmers are illiterate.<sup>4</sup>

The results of the experiences of farmers may be collected by the use of supervised accounts or by the survey method. Each of these methods has its place in farm management research. It is important to keep in mind that the survey method does not necessarily mean obtaining information from farmers who keep no records. It means getting data by personal visits to farmers. A farmer may answer the questions from memory or from his records or from both. For an individual farm record, the essential difference between the survey method and supervised accounts is that in the one case each farmer keeps his records to suit his own fancy, whereas in the other case each farmer keeps a standard set of accounts.

It is clear that the data on each individual farm will be more accurate if the accounts are supervised by the research worker. The most important difficulty of supervised accounts is the impossibility of obtaining a representative sample of all farmers by this method. It is well known that supervised accounts are strongly

<sup>3</sup> Spillman, W. J. Validity of the Survey Method of Research. USDA. Bulletin 529.

Warren, G. F. Agricultural Surveys. Cornell Exp. Stat. Bull. 344.

<sup>4</sup> Buck, J. L. Chinese Farm Economy. The University of Chicago Press, 1930.

biased in favor of better-than-average farmers. For some purposes this bias may not be serious. As one research worker put it, "These farmers who keep supervised accounts are typical of the farmers who come to meetings." However, for many purposes it is necessary to have results which are typical of all farmers in a community, in a county, in a type of farming, or in some other classification. For this purpose the survey method is the only one yet devised for obtaining an adequate sample.

The type of sample obtained by supervised accounts is satisfactory for the study of factors affecting profits on better-than-average farms. Such a sample has serious limitations for the purpose of describing the agriculture in a county or a type-of-farming area. But, casual inspection of many recent publications based on supervised accounts indicates that most of the space in the reports is devoted to description rather than analysis of relationships.

It has been indicated above that in the early days of survey work much discussion centered around the question of the accuracy of the data. This discussion has now subsided and a new one has taken its place—the question of sampling. Much has been said in recent years about the "Stratified Random Sample." The block samples which have been used in most farm management surveys have been strongly criticized because there is no way of stating statistically, that these samples are typical of any group of farms outside of the area studied. Those who have raised this objection have been primarily interested in a sample census rather than in the objective of finding "why certain farms pay better than others." Where description is the major objective, the matter of obtaining a random sample is a very important question. If description is not the major objective, then we can come back to the problem of obtaining a proper sample for the original purpose of determining factors affecting profits.

Since a large number of factors affect profits on farms it is important to reduce as far as possible the number to be considered in any one study. A block sample limited to an area which is homogeneous as to soil, climate, topography, and markets makes it possible to study variations in profits due to other factors. A random sample scattered all over a state must first be sub-divided according to soil, climate, and type of farming. Unless the number of records is extremely large, it will not be possible to study the relation of any other factors to farm profits.



The distinction between the type of sampling necessary for description and the type necessary for a study of relationships is well presented by Deming.<sup>5</sup> Deming labels these two kinds of statistical problems as "Type A" and "Type B." He illustrates these as follows:

"The distinction between Types A and B is already familiar in the homely example of relief work. Some agencies for relief of the destitute aim to give immediate care to their patients, *now, as they are*, regardless of what may be the root of the evil. This is Type A treatment. Other agencies, instead of carrying food and clothing to the destitute, hand them a questionnaire, with the object of studying the causes that lead to poverty, and thus to take action to prevent like occurrences *in the future*. This is Type B treatment. Both types are important. One needs to be supplemented by the other, but they are different; *they have different objectives and require different techniques.*"

Deming points out that when it comes to the question of sampling, we have at our disposal a vast accumulation of contributions in mathematical statistics, which are useful in Type A problems, but that there is no mathematical theory that will tell a man when he has covered enough situations in his inquiries to establish a relationship.

In Type B problems—the establishment of relationships—the interpretation of the results depends on judgment. A thorough understanding of the basic data is essential. If farms are sampled by the block method, this thorough understanding of the data is possible. It is difficult to have a thorough understanding of data obtained from a random sample scattered over a wide area.

Thus, in the establishment of relationships, which has been the main job in farm management research, a block sample seems to be essential. "But," someone asks, "how can you generalize results from this small block to any larger area and if you cannot generalize it to a larger area how can you justify the expense of the study?" The answer is that these studies of relationships must be repeated frequently as to both time and place. When we find the same relationships showing up in different places, and over a period of years we are then getting onto safe ground for generalizations. If the relationship shows up differently in different places or in different

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<sup>5</sup> Deming, W. Edwards. On Some Contributions of Statistical Inference to Marketing Research. Ohio State University Publications, College of Commerce Conference Series. No. C-17, 1941.

years we may be able to generalize as to circumstances under which various results may be expected.

More farm management research data have been collected by the survey method than by any other. What of the future? Are all of the questions answered? Probably the general principles of size of business, crop yields, and production per animal as discovered in the original Tompkins County survey are not likely to change much. But a farmer is interested not in the general principle, but in its application to his farm.

We have only scratched the surface of the possibilities of obtaining farm management information in such detail as to indicate what is the best type of farm organization on a particular soil type, for farmers with different levels of education, or different amounts of help available, or different kinds of markets available. Our big need for the future is to obtain groups of farm management records which are homogeneous, not only as to soil, climate, topography and markets, but also as to the education of the operator, acreage in the farm, and some of the other important factors. If we can eliminate these major factors by the sampling process we can then go ahead to study some of the minor factors affecting farmers' incomes. Most of the farm management surveys made to date have contained so much variation on the major factors that it has been impossible to study the relation of minor factors to incomes.

The opportunities for increased contributions in farm management research by the survey method as well as by other methods are great. No one should get to thinking that we now know all the answers. Anyone who gets to feeling this way should try to plan the operations of *just one* farm. He would then have enough questions to keep a college research department busy for ten years.

# THIRTY YEARS OF FARM FINANCIAL AND PRODUCTION RECORDS IN ILLINOIS

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FARM financial and production records were first kept by Illinois farmers in an organized extension project of the College of Agriculture in 1915. The project is now in its thirtieth year. The account book used in 1915 was used as a trial book in Tazewell County where a group of 65 records were summarized. This account book was printed by the Tazewell County Farm Bureau under the leadership of E. T. Robbins, the agricultural agent.<sup>1</sup> The book was then printed in larger numbers by the Agricultural Extension Service and used in Tazewell and a few other counties in 1916. Two Woodford County farmers have kept the book continuously from 1916 to the present year.

In cooperation with the United States Department of Agriculture the College of Agriculture collected survey records in 1913. Some difficulties in the use of survey records in studying farm problems under midwest conditions presented themselves. Because in the midwest large inventories of marketable grain and livestock pile up, the farmers find it hard to think back for a full year and remember with sufficient accuracy either the inventory of the previous year or the sales that belong to the current year's operations; thus haziness of memory constitutes a difficulty in the use of the survey method. This is particularly true in the case of crop-share tenants who may not be fully concerned with sale of the landlord's share of the crops.

The farm account book rapidly took the place of the survey record that had been used in former years in Illinois and other mid-western states as the basis of farm management extension work. The farmers who used it were contacted at the beginning of the year and assisted in recording their capital assets of land, buildings, machinery and breeding stock and their inventories of feed, grain and livestock on hand at the beginning of the accounting year. The books, which provided for the recording of farm expenses and receipts and the production of crops, were left with the cooperating

<sup>1</sup> In those early years of the Extension Service, the county farm bureau was organized as the local organization through which the Extension Service accomplished its work in the county.

farmers who made their own entries in the books. At the end of the year the books were inspected for completeness, the end-of-year inventories and the depreciated values of capital assets were recorded, and the books were collected for analysis.

When the account-book-kept records were checked with survey records taken on some of the same farms, it was evident that important items of expenses, receipts, and inventory values were often omitted from the survey records. The same devices that were used to check survey records for accuracy were applied to the records kept by farmers, a method which had the added advantage of including the actual entries of most farm business transactions and a good inventory at the beginning as well as the end of the year. After the records were summarized, the books were returned to the cooperating farmers.

A comparative study of the survey and accounting methods of obtaining farm records led to the conclusion by the late W. F. Handschin and H. C. M. Case that, under corn-belt farming conditions, greater accuracy was to be obtained by the account-book-kept-by-the-farmer method than by the use of annual surveys.<sup>2</sup> This statement applies especially to areas where large inventories of crops and livestock are normally carried from one year to the next. The actual difference in the cost of securing survey records and account-book records is not significant.

It was recognized that most of the account books were kept by the more progressive farmers and so the records did not provide an "average" of conditions among all farmers of the area in which the books were kept. In order to obtain information in regard to average conditions, survey records have been taken on all farms in selected typical areas from time to time. Comparisons of the records obtained in the same area by the two methods have led to the realization that the average earnings of the "lower" one-fifth to one-third of account-keeping farmers are about equal to the average earnings of all farmers in the area. The late W. F. Handschin used to say that even though farm financial records are not representative of all farms in an area, they furnish the farm management research worker the information he is primarily interested in obtaining, namely why some farmers succeed better than others.

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<sup>2</sup> W. F. Handschin was head of the Department of Farm Organization and Management (later merged into the Department of Agricultural Economics) and H. C. M. Case was extension specialist in farm organization and management.

*The Extension Project in Farm Accounting*

Beginning in 1915 with a maximum of 65 cooperating farmers in Tazewell County, the state-wide Extension Project in Farm Accounting was extended to 218 cooperators in ten counties in 1923 (95 in Woodford County); in 1924 it jumped to 606 cooperators in 34 counties, and during the past ten years has increased to from 2,000 to 3,000 per year with nearly every county represented.

Like other extension projects, the Farm Accounting Project is conducted in each county by the county agricultural agent cooperating with the Extension Specialist. In most counties, the accounts are kept on the calendar year basis. Schools for beginning account keepers are held near the first of the year. In many respects the work in Illinois has been similar to that in most of the midwestern states. Formerly all books were checked in individually by the extension specialist or the county agricultural agent. In recent years lack of manpower has necessitated the use of the group method of checking in books, with some individual checking of records in some counties. Directions for use of the records in filing income tax forms are returned with the books. In most counties, the county agricultural agents arrange to have competent persons assist account-keeping farmers file income tax papers. Summaries of the farm account records are made by type-of-farming areas. One report for each cooperating farmer is prepared for his use. It shows his financial and production records in comparison with the average of the records of all farms in his area, farms having the same quality of soil, farms of the same size, and farms that have the same sources of income.

The individual reports are returned to the cooperating farmers by the county agricultural agent accompanied by an extension specialist in farm management. The extension service manpower shortage during recent years has made it impossible to give adequate time for this work. The extension specialist usually visits twelve to fifteen farms per day. While this seems very inadequate, farmers continue to express their appreciation of the value of the service. During recent years a fee of \$1.00 or \$2.00 per record has been collected from cooperating farmers to pay a part of the cost of summarizing the records.

Beginning in 1924, a state summary has been prepared each year. The state summary gives averages of essential data by counties and type-of-farming areas. From 1924 to 1937 the state summary was included in the "A Year's Progress in Solving Farm Problems of

Illinois" which was the annual report of the work of the Agricultural Experiment Station; from 1938 to 1939 it was printed as a separate report; and since 1940 it has been published as a special number of the *Illinois Farm Economics*, a publication of the Department of Agricultural Economics.

The appreciation of farmers for this type of extension work is shown by their willingness to give financial assistance to the project in order that fieldmen who give all of their time to servicing a limited number of farms in the Farm Bureau Farm Management Service may be employed.

### *The Farm Bureau Farm Management Service*

The Farm Bureau Farm Management Service was organized in 1924 by and for a group of farmers in Livingston, McLean, Tazewell, and Woodford counties which are in the north central part of Illinois.<sup>3</sup> Many of the farmers who organized the project, especially in Woodford and Tazewell counties, had been cooperating in the farm accounting project since 1916. The time came when they asked for more service than either the extension specialists or the county agricultural agents could give. It was the privilege of the author before becoming a permanent member of the staff of the University of Illinois in charge of this phase of work to serve as the fieldman of this first group for a period of three years.

A plan for a cooperative farm management service whereby the full time of a farm management specialist would be available to a limited number of cooperating farmers who would pay a large part of the cost was presented to a few leaders in each of the four counties. With almost the unanimous approval of such leaders, the plan was presented to each of the farm bureau boards and approved by them. The county farm bureau was then, and always has been in Illinois, the local organization through which the agricultural extension service functions. In fact, it was originally organized for that purpose only.

In the beginning, some of the county farm bureaus paid a portion of their cooperating farmers' fees and although the farmers paid the major share of the cost, the extension service paid a part of the specialist's salary. In the beginning the cooperating farmers signed agreements to carry on the work for the three years of 1925, 1926, and 1927. They signed three post-dated checks, one payable Jan-

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<sup>3</sup> Similar services were organized a few years later in Minnesota, Iowa, and Kansas.

uary 1 of each year. At the end of the three years the project was reorganized for another period of years, and has been so reorganized each four years since. Fifty of the original cooperators have continued in the service throughout the past twenty years.

Beginning in 1929, the number of cooperators in the four counties was doubled and two fieldmen were employed; in 1930 it was extended into four adjoining counties in western Illinois, and in 1931 into four counties in northern Illinois. About 400 farmers continued in the service throughout the depression of the thirties. Since 1937 it has expanded into thirty-seven counties covering all of the north third of the state. Six fieldmen are serving a total of 1,250 cooperators at this time. Three other groups are now (November 1944) being organized in seventeen additional counties. Beginning with January 1, 1945, there will be about 1,900 cooperators in 54 counties in the north three-fifths of the state, served by nine fieldmen. During recent years whenever the project has been reorganized in any area from 90 to 95 percent of those who had been in the service have continued for another four years.

At the present time the several county farm bureaus concerned, cooperating with the Department of Agricultural Economics, organize the Farm Bureau Farm Management Service in groups of from five to ten adjoining counties. One fieldman serves from 200 to 230 cooperators. The entire cost of the service is from about \$35 to \$40 per farm per year. The University of Illinois pays about one-fifth of the cost in the salaries of those who organize and supervise the work and in other overhead costs. The cooperator's fees vary from a minimum of about \$20 to a maximum of \$60 per farm per year. The fees are graduated, the size of the farms and the acres of untillable land determining the amount paid.

In order to qualify as fieldman, a man must have grown up in the country, must be a graduate of an agricultural college, and must after graduation have had several years' practical experience in farm management work. The salaries paid are equivalent to those paid to the more experienced county agricultural agents.

The fieldman makes a minimum of three visits per year to each farm. A definite appointment for each visit is made by post card a few days before the visit is made. One visit is made in March, April, or May after the summarized book of the preceding year is in the farmer's hands. The second visit is made in May, June, or July when the fieldman takes the annual farm business analysis report

to the cooperator and explains it and discusses problems with him. The third visit is made in the fall of the year, when much of the time is spent in helping the cooperators with land use, livestock, and other farm organization problems. A fourth contact is made with each cooperator at a central point in each county during the last of December or in January when the year's record is carefully checked over before the book is brought to the University for summary and analysis. A fifth contact at an appointed place is made with those who wish the fieldman's help with the making of income tax returns. While this contact is optional, about two-thirds of the cooperators avail themselves of it.

Two group contacts are made each year with the cooperators in each county. During the fall, the county agricultural agent and the fieldman arranges a field trip to two or three farms of cooperators whose farms have shown good earnings and which demonstrate some good practices in farm organization and management. Usually some subject-matter specialist from the State Extension Service is present to help lead discussions of particular subjects. In early winter the county agricultural agent and the fieldman arrange for an all-day county meeting at some central place where agricultural outlook and other matters of interest are discussed and instructions for closing account books are given.

The fieldman in the Farm Bureau Farm Management Service does not replace the county agricultural agent nor the extension specialist. County agents have repeatedly made the statement that cooperators in the Farm Bureau Farm Management Service were more likely to call on them, the county agents, for help with special problems after they enrolled in the service than before. County agents learn to look to cooperators for leadership in community programs.

The accounts kept by the cooperating farmers are similar to those kept by cooperators in the state-wide extension project in farm accounting; that is, they include capital asset accounts with buildings, land improvements, machinery and equipment, and breeding stock; inventories of feed, grain, and livestock; expense and receipts of all phases of the farm business; and the production of crops. In addition to the records kept in the extension project in farm accounting, the cooperators record the total live-weight production of each kind of livestock (including dairy cattle); the production of milk, eggs, and wool; and the amounts and value of grain,



hay, silage, pasture, and purchased supplements fed to each kind of livestock. The value of the farm products used in the farm home are included as part of the gross farm earnings.

### *Value of Farm Accounts as Sources of Research Data*

The farm account records based upon both the state-wide extension records and the Farm Bureau Farm Management Service records have proved useful sources of research data in studies of farm organization and operation, land appraisal, landlord-tenant relations, father-son agreements, soil conservation practices, farm credit, and numerous other subjects.

*Farm organization and operation.*<sup>4</sup> Farm account records have been the means of measuring the economic value of many farm organization and operation practices. Farmers are interested in improving their methods of producing a given crop or of raising a certain kind of livestock. However, profitable farm operation demands a proper balance among the several factors involved in the organization and operation of the farm business. It is not unusual for a farmer to excel in one or a few lines of work, but to do so poorly in others that the gains from the good work are offset by the losses from the poor, with the result that his farming operations as a whole are unprofitable.

The annual farm management analysis prepared for each farm account keeper shows, first, how profitably he has operated his farm as compared with others farming under similar conditions; second, it shows those crop and livestock projects in which he excels and on which he may build a more profitable business; and third, it shows those places where the so-called leaks occur and gives him an opportunity to "stop the leaks." Many a farmer has been surprised to learn that his yearly income was increased materially over what it would otherwise have been by some project which he had considered of minor importance and that some other project in which he had been more interested was in reality a source of loss to him.

A few illustrations will show the extent to which some farmers have changed their systems of farming as a result of their farm business analysis. One of the early account keepers was producing beef from feeder cattle and pork from home-raised pigs as major enter-

<sup>4</sup> Two bulletins published by the Illinois Experiment Station, much of the data for which were obtained from farm accounts are: Bulletin 329, "Organizing the Corn-Belt Farm for Profitable Production" by H. C. M. Case, R. H. Wilcox, and H. A. Berg, and Bulletin 444, "Farm Practices and Their Effects on Farm Earnings" by M. L. Mosher and H. C. M. Case.

prises. His records showed that he did not succeed as well with them as others did. During the agricultural depression of the twenties he began to milk a few cows to supplement his low income. His record showed that he did well with the cows and he found that he did not dislike the dairy business. He gradually shifted from beef and pork to dairy production, has become the leading dairyman in his county, and is farming more profitably because of the change.

One of the original cooperators of the Farm Bureau Farm Management Service kept some cattle, some hogs, some sheep, and some poultry. After a few years of study of his records he found that hogs were doing better for him than for most farmers and that they were paying him more for feed and labor than any other kind of livestock. He turned his efforts largely to pork production and has become one of the most efficient large scale pork producers in the state.

Still another farmer was doing well with dairy cattle and hogs. His fieldman, however, pointed out to him that his business analysis showed that his hens were paying him more for the feed and labor than either the cattle or hogs. As a result he has retained his dairy herd and hogs but has gradually increased his poultry business until during recent years he numbers his hens by the thousands and has had an excellent income from his farm.

One returned veteran of the First World War saw from his farm business analysis that pork producing farms were proving profitable in his part of the state and that his hogs did not do as well as the average. He determined to learn to raise hogs successfully and to increase the size of his hog business. He went to his fieldman, his county agricultural agent, and the extension specialist in livestock production for help and so succeeded in his efforts that his farm has been used repeatedly to demonstrate good pork production methods. He went heavily into debt in the late twenties to buy the family farm and has testified repeatedly that without the help of the farm accounts and the accompanying services he would have been unable to make the necessary payments on his mortgage during the depression years of 1930 to 1935.

Hundreds of illustrations could be given to show the value to individual farmers of the annual analysis of the farm business and the help that fieldmen, county agricultural agents, and extension specialists have been in solving individual problems brought out by the records. The best proof of their value to farmers rests in the continuity of records on the same farms. More than 1,000 farmers have kept accounts for ten years or longer.

"Farm accounts kept by nineteen Woodford County farmers led them to improve the organization and operation of their farms in ways that added approximately \$650 to their average net incomes in 1922, the seventh consecutive year in which they kept accounts. Uniform records kept in a simple farm account book prepared by the University of Illinois provided the means of finding out at what point the farms could be made more profitable."<sup>5</sup>

The following statement appeared in a bulletin published in 1938, the data for which were obtained from records kept by farmers co-operating in the Farm Bureau Farm Management Service: "Of the fifty-seven farmers, the ten who made the most improvement in earnings compared with the average of the group during the ten years from 1925 to 1934, earned approximately \$1,500 a year more at the end of the period than they would have earned had they continued to farm throughout the period as they did during the first three years of the period. These improvements in earnings were due largely to changes in the organization and operation of the farms as a result of membership in the Farm Bureau Farm Management Service."<sup>6</sup>

Improvements in farm organization are cumulative and earnings increase for many years as a result of improved organization and operation of farms.

*Land appraisal.* Farm account records have proved useful as a means of arriving at a long-time productive value of farm lands. A weighted state average value of \$79 an acre based on the twelve-year (1926 to 1937) average net cash income per acre capitalized at five percent was reported in a study by P. E. Johnston and H. C. M. Case.<sup>7</sup> The earned value fluctuated widely with changes in the prices of farm products and supplies from \$7 an acre in 1932 to \$123 per acre in 1929 and 1936. The twelve-year average value varied in different parts of the state from \$14 per acre in a low productive area of southern Illinois to \$103 per acre in a relatively more productive land area of northern Illinois.

In a study reported in *Illinois Farm Economics*, June 1941, the author reported that studies in Woodford County show that the average land under ordinary tenant management has had a 25-year

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<sup>5</sup> Case, H. C. M., and M. L. Mosher, Increasing Farm Earnings by the Use of Simple Farm Accounts, Ill. Agri. Exp. Stat. Bull. 252.

<sup>6</sup> Mosher, M. L., and H. C. M. Case, Farm Practices and Their Effects on Farm Earnings. Illinois Agri. Exp. Stat. Bull. 444, p. 589.

<sup>7</sup> Johnson, P. E., and H. C. M. Case, Twelve Years of Farm Accounts in Illinois, Illinois Agri. Exp. Bull. 491.

(1916-1940) investment value of about \$125 per acre for the land and buildings, including the residence.

Farm records kept over periods of ten or more years are being used in a cooperative project with the Department of Agronomy in evaluating the productive capacity of different soil types and the effects of different practices in soil management. The soils on several hundreds of long-time account keeping farms have been mapped. The crop yields, land use, and soil treatments have been obtained from the farm account books kept by the cooperating farmers. Crop yield data have been correlated with soil types and results obtained that are valuable in land appraisal and in soil management. The effects of various soil treatments on soils of different types are useful in planning soil improvement programs.

Several papers based on the farm accounts and soil-type studies on accounting farms have been presented at various conferences for land appraisers.

*Landlord-tenant relations.* Data from farm records kept during the past thirty years on many thousands of rented Illinois farms have led to more satisfactory divisions of receipts and operating expenses of both landlord and tenant than it would otherwise have been possible to make.

Illinois Agricultural Experiment Station Circular No. 503 describes three types of leases: The Crop Share-Cash Lease, The Livestock Share Lease, and the Manager-Tenant Lease, and methods of evaluating the contributions of both landlord and tenant under each type of lease. Lease forms have been printed and sold at cost of printing to hundreds of Illinois farmers.

*Father-son agreements.* Farm records have enabled many fathers and sons to reach satisfactory agreements as to the divisions of farm earnings and farm expenses on farms where the sons remain at home after becoming of age and where the father is still active and wishes to continue in the farming business. The extension specialists in farm management and the fieldmen in the Farm Bureau Farm Management Service have been helpful to many fathers and sons by assisting them to reach satisfactory solutions of this problem. Farm records are used as a basis of developing the agreement and in determining the income to each party. An Illinois Agricultural Extension Circular is now being published under the title, "Father-Son Farm Business Agreements."

*Value of soil conservation practices.* In November 1936, a cooperative project agreement was entered into between the Depart-

ment of Agricultural Economics, Illinois Agricultural Experiment Station, and the Soil Conservation Service and Bureau of Agricultural Economics, U. S. Department of Agriculture, to conduct "A Study to Determine the Economic Effects on Illinois Farms Resulting from the Operation of Definitely Planned Program of Soil and Water Conservation and Erosion Control." Most of the data for this study have been obtained from farm account records which were the basis of the project.

E. L. Sauer, in charge of the project, has stated some of the results obtained from the study as follows: Average per acre increases for the five years 1939-1943 in Illinois for crops grown on the contour compared to up-and-down the slope were: Corn, 7.5 bushels; soybeans, 2.7 bushels; oats, 7.4 bushels. Based on the average crop yields per acre for the account-keeping farms from which these data were secured, "around-the-hill" farming averaged for the five years 1939-1943, the following percentage increases: Corn, 13 percent; soybeans, 13 percent; oats, 20 percent; and wheat, 19 percent. In studying the farm operating costs resulting from the use of conservation practices, farms on which all or the major part of the farming operations were on the contour were matched with comparable neighboring farms on which none of the field operations were on the contour. Results of this study on 135 farms for the three years 1940-1942 show that power and machinery costs and labor costs per crop acre were practically the same on the two groups of farms. Man labor costs averaged \$9.93 and \$10.40 and power and machinery costs, \$6.85 and \$7 per acre per year on contoured and non-contoured farms respectively.<sup>8</sup>

*Farm credit studies.* Farm account records have been used as the basis of various studies in the farm credit field. Notable among these was the study made by Joseph Ackerman, Assistant Director of the Farm Foundation, and reported in his doctoral dissertation "Factors Influencing Farm Lending Experience in Coles and Six Adjoining Counties, Illinois, 1917-1933."

*Tax Commission and Commerce Commission hearings on farm taxes and transportation rates.* Farm account records kept by thousands of Illinois farmers during the past thirty years have been very helpful as evidence in hearings before the Illinois State Tax Commission and the Interstate Commerce Commission. From time

<sup>8</sup> From article, "Extra Acres from Conservation Practices Help Meet Production Goals," *Illinois Farm Economics*, April 1944.

to time staff members of the Department of Agricultural Economics, College of Agriculture, University of Illinois, have been called upon to testify in regard to the relation of taxes and transportation rates to farm earnings in tax and rate hearings. Always, the accumulated farm records have been helpful in presenting the farmer's case in its true light.

*Evaluating the use of T.V.A. phosphates.* The Department of Agricultural Economics and the Department of Agronomy began a five-year research project early in 1944, the purpose of which is the evaluation of the use of phosphates distributed by the T.V.A. About 200 farmers in the southern part of the state are keeping farm accounts under the direction of a fieldman who works with them in much the same way as the fieldmen in the Farm Bureau Farm Management Service work with their cooperators. Some of the cooperating farmers are using the T.V.A. phosphates and others are using none. Comparisons of the crop rotations, crop yields, livestock production and farm earnings will be made of farms that use and those that do not use phosphates.

*Evaluating the personal qualities of good farmers.* Farm records have assisted in the evaluation of the personal qualities of farmers that enable them to operate their farms successfully. H. G. Russell wrote a master's degree thesis on the subject, "The Influence of Certain Personal Qualifications of the Farm Operator on Farm Earnings." As a basis of this study he asked county agricultural agents and fieldmen of the Farm Bureau Farm Management Service to rate several personal characteristics of a few hundred farm account keepers. These ratings were then correlated with the earnings of their farms over an average of several years.

As the author of this paper has studied the practices followed by farmers whose records have shown them to be successful, he has also studied the personal characteristics of the farmers. A few years ago he prepared a paper on the subject and read it before Rural Youth groups, college classes, and various farm groups.<sup>9</sup>

*Planning farms for soil conservation and economic operations* The planning of record-keeping farms for soil improvement, soil conservation, and economic operation was made a part of the Extension Project in Farm Management almost from the beginning of farm accounting in Illinois. For the first few years, the farm plan-

<sup>9</sup> "Personal Qualities of Good Farmers," by M. L. Mosher, Department of Agricultural Economics, mimeo.

ning consisted mostly of planning for rotations of crops and good land use. Later, under the guidance of R. R. Hudelson, then Extension Specialist in Farm Management and now Associate Dean of the College of Agriculture, the fitting of a livestock program to the land use program was included when a mimeographed "Guide to Farm Planning" was published. More recently a printed "Farm Planning Booklet" was prepared under the leadership of J. B. Cunningham, formerly a fieldman in the Farm Bureau Farm Management Service and now Extension Specialist in Farm Management. The booklet goes further than the "Guide to Farm Planning" by providing standards of expenses and estimates of the probable long-time earnings of the farm both before and after the new plan was put into effect. About 40,000 copies have been distributed at cost of printing.

Some of the farms whose operators were assisted several years ago in working out complete plans for land use, livestock production, and economic operation are now among the more profitably operated record-keeping farms.

*Farm account records form the basis of graduate study.* Farm account records have formed the basis of many theses presented in partial fulfillment of requirements for masters' degrees. At least three doctoral dissertations have used farm account records as the source of much of their data.<sup>10</sup>

#### *Value of Farm Accounts in Extension Teaching*

Farm accounting in Illinois has always been considered a joint extension and research project. From 2,000 to 3,500 farmers have been enrolled in the extension and research projects each year for the past twenty years. Each of more than 1,000 farmers has kept the accounts for ten years or longer.

*Individual service.* The service rendered to the thousands of individual farmers who have kept records constitutes one of the highest forms of extension teaching. This is especially true in the case of cooperators in the Farm Bureau Farm Management Service who have paid for most of the cost of the services of a trained farm management specialist.

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<sup>10</sup> Joseph Ackerman wrote on the subject, "Factors Influencing Farm Lending Experiences in Coles and Six Adjoining Counties, Illinois, 1917-1933." R. C. Ross wrote on the subject, "The Influence of Type of Production and Size of Farm on Illinois Farm Expenses." P. E. Johnston wrote on the subject, "Factors Influencing Farm Earnings on 380 Central Illinois Farms."

*Demonstration farms.* Many farms have been used to demonstrate farm management principles and practices. For many years it has been customary to hold farm management tours in counties where records are kept. Two to four farms whose records show them to be more than ordinarily profitable and which demonstrate excellent work with some important practices are visited in one day.

These tours to farms are conducted by the county agricultural agent and a farm management extension specialist or the fieldman of the Farm Bureau Farm Management Service. Often specialists from other departments are present to answer particular questions in their fields. The tours are advertised throughout the counties and are often attended by from 100 to 200 people. A few farms have been used repeatedly as demonstration farms with several hundreds of farmers having the opportunity to visit them and talk with the operators regarding their plans of organization and practices of operation.

College classes in farm management and classes in vocational agriculture have been taken to these demonstration farms where they have received from the farm operators valuable lessons in practical farm management.

*County programs of work.* The data obtained from 30 to 100 farm records per county have proved helpful in showing county agricultural agents and their program planning committees what projects should be emphasized in educational programs. Such records are helpful in appraising problems in land use, crop production, livestock production, farm buildings and land improvements, farm machinery and equipment, and farm labor. With the greatly restricted supply of farm labor, such data have been particularly helpful in planning wartime maximum production.

*General education meetings.* Data obtained from farm records have been the basis of extension lectures and discussions at hundreds of meetings of farmers' institutes, community clubs, service clubs and other groups. Farm audiences listen with interest and profit to discussions of the practices followed by farmers whose records give indisputable evidence of their success. They recognize the two sources of information for profitable practices; namely, the agricultural experiment station and the methods followed by successful farmers.



## THE ECONOMICS OF PUBLIC MEASURES TO SUBSIDIZE FOOD CONSUMPTION\*

HERMAN M. SOUTHWORTH  
*War Food Administration*

WITH the end of the war in prospect, increasing attention is turning to the problems of post-war production and distribution of food. Three elements stand out in the situation in prospect:

1. Food production is expanded by one-fourth to one-third above pre-war.
2. It is generally anticipated that there will be, at least temporarily during the reconversion of industry, some decline in employment and earnings and hence in demand for food.
3. Legislation<sup>1</sup> requires support of prices of most of the chief farm products at not less than 90 percent of parity for at least two years after the war.

At the same time the war has focused attention on nutrition, and has broadened educational work on selection of adequate diets. It has likewise shown the food-consuming capacity of the American buying public when it has the money to spend. And the war has presented the challenge to mobilize our resources for full peacetime production and consumption as effectively as we mobilized them for fighting. High-level production and consumption of food have an essential place in a program to achieve this.

Public measures to subsidize the consumption of food offer an obvious means of attacking these post-war problems. Hence the returning attention to the surplus disposal programs of the depression. Hence, likewise, the discussion of market-wide price subsidies to bridge the gap between the enacted support prices to producers and the prices at which the resulting production will sell. Hence the rising interest in proposals like the National Food Allotment Plan for assuring all people an adequate diet, come prosperity or depression.

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\* The writer wishes to acknowledge the helpful criticism and suggestion of Rainer Schickele and Frederick V. Waugh of the War Food Administration, who read this paper. For the analysis and conclusions, however, the author is solely responsible. They reflect his own views merely, and not the official views of any Government agency or official.

<sup>1</sup> For a recent summary and analysis of this legislation see "Federal Statutory Provisions Relating to Price Support for Agricultural Commodities" (revision of talk by Robert H. Shields, Solicitor, WFA and USDA, Denver, August 16, 1944; revised to include statutory changes through October 3, 1944) (USDA mimeographed release).

The purpose of this paper is to explore the economics of measures like these. Specifically, we shall attempt:

1. To state the chief objectives of such programs;
2. To list the chief characteristics of operation that vary from one program to another and differentiate their economic effects;
3. To develop an economic analysis relating these variable characteristics of operation to the objectives of the programs.

The analysis will be qualitative, intended to furnish a general framework in terms of which any proposed program might be analyzed to determine how well it will serve its stated objectives, and which will throw light on the compatibility or incompatibility of different objectives in view of the program-means available for achieving them.

### *Objectives of Subsidy Programs*

The objectives of public measures to subsidize food consumption are discussed under four chief headings: consumption, production, marketing, and promotion of broad aims of economic policy.

#### *1. Consumption Objectives*

The most obvious purpose of food subsidies is to increase or improve food consumption. These terms, however, require some examination. "Increased" food consumption requires careful definition, "improved" consumption presupposes a norm of some kind.

With respect to individual foods, increased consumption is an obvious term—it means more pounds. But foods generally, or even those commonly grouped together, are not comparable on a poundage basis. Two pounds of soup is not "more" food than a pound of beans, nor even is two pounds of fluid milk more food than one pound of evaporated milk. Within the United States, at least, a majority of people get their stomachs filled fairly regularly, so that only among the very poor would we expect food subsidies to increase the net poundage ingested. (Subsidies among some other groups may increase the poundage *purchased*.)

It is well established, however, that food expenditure averages higher among families of higher income; and that quality of diet averages better among families with greater food expenditure. For purposes of this discussion, therefore, we shall roughly define an "increase in food consumption" as an increase in a physical index

of consumption weighted by appropriate normal price ratios. Definition of "improvement in food consumption" we shall leave to the nutritionists, assuming only that in any specific case they can tell us whether a change represents improvement. Since, as just pointed out, "increase" and "improvement" are broadly correlated, we shall assume in discussing total food consumption that an increase in consumption indicates a simultaneous improvement.

Now to state the consumption objectives of food subsidy programs more specifically. They may attach greater or less emphasis to increasing consumption of food as against consumption of other goods. They may have broad or narrowly specific intentions as to the group whose consumption is to be increased, and precise or loose definition of the standard to which they shall be raised. The programs may purpose to increase the consumption of a single item of food, like fluid milk, or may attach varying emphasis to increasing the consumption of specified foods to the exclusion of others. Such selection of specific foods may have a more or less narrowly nutritional basis.

## *2. Production Objectives*

From the production side, the immediate purpose of food subsidies is to increase prices or returns to producers. But this purpose may be stated more or less specifically in terms of increasing prices or of increasing returns, increasing net incomes or increasing gross incomes. The intended beneficiaries may be all producers collectively, or may be more or less specifically the members of special producer groups—especially the producers of particular commodities. Subsidy programs undertaken for carrying out the Steagall Amendment, for example, have defined in legislation the objective of maintaining very specific minimum prices for a very specific list of commodities.

It may be useful in this connection to draw a distinction between "cushioning objectives" and "adjustment objectives." By "cushioning objectives" we refer to the aim of maintaining prices or incomes from production that is excessive in relation to market demand or to levels of consumption that it is the public purpose to maintain indefinitely; in other words, to slow down or reduce the hardship from a process of adjustment that is recognized as desirable in the long run. By "adjustment objectives" we refer to the aim of hastening, through price- or income-stimuli, the shift to a higher

level of production that is justifiable in relation to market demand or to levels of consumption that it is the public purpose to maintain. We shall also include under adjustment objectives, though the term is less apt, the aim of maintaining stimuli to production where the lack of such stimuli in the absence of a Government program reflects a transient consumption maladjustment that it is the public purpose to remedy. This distinction will be helpful in examining the compatibility or incompatibility of various objectives.

### 3. *Marketing Objectives*

Marketing objectives have not usually been so clearly stated in connection with consumption subsidy programs as have the production and consumption objectives. Some programs have had, however, the incidental aim of increasing marketing efficiency. And subsidy programs can be used directly to protect or cushion the marketing structure generally or certain types of marketing enterprise against economic adjustment, or to encourage and hasten desired changes in the food-distributive mechanism—in essentially the same manner as in the case of food production.<sup>2</sup>

### 4. *Implementing Broad Economic Policies*

Subsidy programs by their nature benefit special groups in society. A proper balance between the interests of these groups and others requires a positive expression of a public interest within which the interests of all special groups are synthesized.

The extent to which definite objectives are established for food subsidy programs in connection with the aims of over-all Government economic policy depends on how definite a content is given to these aims. A clearly stated policy regarding social security objectives or the adjustment of income distribution, for example, has obvious implications for food subsidy programs. Food subsidies would likewise need to be closely integrated within any programs for stabilizing or stimulating economic activity through fiscal operations.

The aim of increasing food consumption needs to be kept in balance with the need for assuring adequate levels of consumption of other goods—housing, clothing, medical care, even recreation.

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<sup>2</sup> From a narrowly economic standpoint it is perhaps chiefly happenstance that the attempt to aid the family-size grocery store, as analogous to the family-size farm, has so largely taken the form of fair-trade laws and chain store taxes.

The desire to restrict closely, on the basis of need, the group whose food consumption is to be subsidized needs to be tempered by consideration of the importance of avoiding attaching of social stigma to participation or setting apart social classes in a way that will raise antagonism. Subsidiary considerations like these impose conditions on the operation of food subsidy programs that may qualify or limit their more specific objectives.

### *Types of Programs*

To facilitate later discussion, the mechanics of operation of some of the chief programs that have been used or proposed for subsidizing food consumption are briefly reviewed at this point. We shall consider especially general relief or public assistance programs, the various distribution programs operated by the Surplus Marketing Administration of the Department of Agriculture, the current "roll back" and "hold-the-line" subsidies, and the proposed National Food Allotment Plan.

General public relief measures are usually designed to subsidize the consumption of all goods by people without adequate means for their own support. Recipients are selected by some form of means test. Usually they receive simple cash grants which they can spend as they choose. In some communities, however, their expenditures have been controlled by the use of grocery vouchers—drafts on a grocer for a specified list of foods, the voucher being redeemable by the grocer at the community welfare office.

During the depression a number of programs were developed for making surplus farm products available to needy groups.<sup>3</sup> The first of these involved actual purchase of foods by the Federal Government and distribution of them through State welfare agencies. Commodities were shipped to carlot receiving points in the States. State agencies, with the aid of WPA labor, were responsible for all further handling and for distribution of the foods to institutions or to relief clients. A small volume of food, chiefly temporary local surpluses of perishables, continues to be moved by direct distribution, chiefly to schools and institutions.

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<sup>3</sup> For description and analysis of these programs, see especially Gold, N. L., Hoffman, A. C., and Waugh, F. V., "Economic Analysis of the Food Stamp Plan," USDA special report, 1940; Southworth, H. M., and Klayman, M. I., "The School Lunch Program and Agricultural Surplus Disposal," USDA miscellaneous publication No. 467; and Sullivan, W. G., "The Relief Milk-Distribution Program," BAE mimeo publication, USDA, 1942.

The Food Stamp Program was developed as an alternative to direct distribution to relief families. It was, in a sense, an outgrowth of a proposed two-price plan under which needy families would have been permitted to purchase surplus foods at reduced prices. Under the Food Stamp Plan families were given blue-colored stamps, usually at the rate of two dollars per person per month, conditioned in most communities on the family's buying four dollars' worth of orange-colored stamps per person per month. The orange stamps were good for purchase of any food, the free blue stamps only for buying surplus foods as announced from time to time. Families could, if they wished, obtain more than the minimum amount of blue stamps by buying additional orange stamps. Grocers took the stamps in trade and redeemed them directly at Stamp Plan offices or indirectly through their wholesalers or bankers. This program was discontinued early in the war.

The School Lunch Program was initially operated as part of direct purchase and distribution, foods being supplied to schools for use in lunches for needy children. An extensive Federal program was carried on for the development of school lunch projects. Currently, the School Lunch Program is operated chiefly through cash payments indemnifying the local sponsors up to specified amounts for their expenditures for foods, including milk.

The Relief- and School-Milk Distribution Programs provided a somewhat different technique of surplus disposal. Under Federal marketing orders in several cities, a special producer-price was established for milk used in these programs, a price below that for class I (fluid) milk but above that for milk going into manufactured products. The milk was sold to relief families and needy school children at special low prices, usually about five cents per quart to families and one cent per half pint to children. Distribution was by established handlers, usually through regular channels, but in a few cities special depots were set up for selling relief milk to families. Handlers' margins, lower than margins received on sale of class I milk, were either promulgated by the Secretary of Agriculture or determined by competitive bid. The excess of the allowed margin over the producer-consumer price differential was made up through subsidy payments to handlers. Relief milk distribution to families has been discontinued. The School Milk Program has been made part of the present School Lunch Program.

A number of other programs were operated or proposed for dis-

tributing surpluses, but in general they exhibit no principles of operation not illustrated in the programs just described. One exception is a suggestion briefly considered for establishing special depots where surpluses of perishables in terminal markets would be sold at low prices. Anyone would be eligible to buy but the inconvenience in location and the lack of customary retail services would be expected to limit the custom to needy families—a principle of selection which we shall later refer to as “rationing by inconvenience.”

Except for the School Lunch Program, continued as a protection to children's diets in wartime, the surplus disposal programs just described have been largely or wholly discontinued. In place of them have come “roll-back” or “hold-the-line” subsidies on a number of foods. They take the form of payments at specified rates on the entire quantity sold, usually at the dealer or processor level. (In the case of milk and butterfat production, payments are made directly to producers.) The primary purpose of the subsidies is to take up the gap between increased producer prices, required to assure needed production, and ceiling prices held fast to prevent a rise in cost of living to consumers. Similar general price subsidies have been suggested for taking up anticipated gaps between enacted support prices to producers of some of the foods subject to the Steagall Amendment and the prices the public will pay for the resulting volume of production of these foods.

Among other proposals now current, much attention has centered on the National Food Allotment Plan, embodied in a bill<sup>4</sup> currently before Congress. The bill specifies a basic food allotment meeting adequate dietary standards that would be guaranteed to all families, regardless of income. The cost of the allotment would be determined, from time to time, for different sections of the country. Determination would likewise be made of the usual expenditure for food by families of different composition and income. Any family would be eligible to receive food coupons in amounts making up the difference between the cost of the basic food allotment and the usual food expenditure by families in its composition-and-income classification. Objectives of the plan include assuring adequate markets to food producers as well as adequate food-purchasing power to low-income consumers.

<sup>4</sup> S 185, 79th Congress, 1st Session.

These are the types of measures usually thought of as public subsidies to food consumption, and they will be the chief concern of this paper. In a broad sense, however, numerous other Government expenditures might usefully be thought of as food subsidies.<sup>5</sup> Market news services, grading and inspection, publicly established markets of various kinds, numerous regulatory services, all are intended to lower marketing costs or facilitate the movement of foods from producer to consumer. Publicly supported research and educational work in production, marketing, and consumption have laid the foundations for developments without which present levels of food production and consumption would be inconceivable. While such programs are outside the scope of the present paper they should by no means be overlooked as effective uses of public funds in promoting the objectives that have been outlined. Indeed, the economies such programs make possible may multiply many times the subsidizing effect of the public expenditures involved.

### *Characteristics of Operation of Food Subsidy Programs*

The objectives of measures to subsidize food consumption have been discussed and the mode of operation described of a number of programs, actual or proposed, intended to serve these objectives. Four characteristics of operation are selected with respect to which such programs vary, as a basis for economic analysis of their effectiveness. These characteristics are: (1) the selection of consumer beneficiaries; (2) the rate of subsidy to these beneficiaries; (3) the imposition of restrictions on their use of subsidy funds; and (4) the marketing mechanism through which the subsidy is made effective.

#### *1. Selection of Beneficiaries*

General price subsidies are available to all consumers in the market. Most subsidy programs, however, select consumers eligible for participation either through some form of means test or through membership in a specified group—children in a particular school, for example, or families purchasing from a particular outlet. In locally administered programs there is considerable variation from community to community in standards of eligibility, and this varia-

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<sup>5</sup> The author is unable to draw any clear line between subsidies to the *consumption* of food and subsidies to food production and marketing. Except in limiting cases—e.g. where demand or supply are infinitely elastic or wholly inelastic—a subsidy to any one subsidizes all three.



tion was reflected in the Federal surplus disposal programs. A uniform national basis of selection would be provided under the Food Allotment Plan. Furthermore, selection of actual participants depends on the attractiveness of programs to those who are eligible. Benefits to participants must outweigh such deterrents as the effort required to register and to maintain participant status, inconveniences associated with participation (such as buying stamps in advance or getting foods through special outlets), or any accompanying social stigma. In programs based on "rationing by inconvenience" these deterrents are themselves depended upon to provide a sufficient restriction on participation, eliminating the need for means tests.

### *2. Rate of Subsidy*

The average rate of subsidy in any program obviously depends upon number of participants or beneficiaries and the funds available. But participants may or may not be subsidized all at the same rate. Relief payments, for example, vary with the category of recipient. Minimum subsidies under the Food Stamp Program were initially at a flat rate of two dollars in blue stamps per person per month, but as previously noted participants could increase this amount by buying more than the minimum quantity of orange stamps. (Later in the program, more complex adjustments were provided to take care of special cases like large family groups.) The proposed National Food Allotment Plan would provide a sliding scale of benefits to participants, proportioned to needs.

In a general price subsidy the rate is uniform per pound of commodity, but benefits to individual consumers vary with the quantity they purchase. Under programs depending on rationing by inconvenience the advantage different consumers take of the program will depend largely on the urgency of their need for food savings.

### *3. Restrictions on Use of Subsidy*

Programs involve in varying degree restrictions on the use to which subsidy funds are put. Recipients of a simple cash relief grant, of course, are free to spend the money for whatever they please. At the opposite extreme, price subsidies automatically apply only to purchases of the commodities subsidized. Similarly with subsidies in the form of actual grants of food.

A common method of restricting the use of grants is to make them in the form of special currency, good only for the purchase of food or of specified foods. Grocery vouchers, food stamps, and food allotment coupons are examples. The effect is similar to that with payments in kind, but special handling of foods themselves is avoided.

In spite of such restrictions, however, any outright grant can be indirectly diverted to other uses. If a family would buy two pounds of beans anyway, giving it up to two pounds of beans as a consumption subsidy merely relieves it of the necessity of that much expenditure on its own behalf. In effect, its income is increased by the value of two pounds of beans, and it may spend some or none of this increased income on additional beans.

It was to prevent this that participants in the Food Stamp Program were required to buy orange stamps out of their own funds. Thus their food expenditure was frozen at a level approaching, at, or probably in some cases even above, what they would normally spend, assuring that the subsidy stamps were used to purchase foods in excess of that level.

#### 4. *Marketing Mechanism*

The final chief respect in which food subsidy programs differ is in the channels of distribution they employ and the way in which these channels are used. Most of the programs previously described depend upon regular commercial channels of distribution for the handling of foods under subsidized purchase. The Direct Purchase and Distribution Program and the Relief-Milk Program in cities where special depots were used are exceptions.

Programs that depend upon regular marketing channels for the subsidized distribution of food may still differ, however, with respect to any special services they require from participating distributors, with respect to their selectivity of alternative channels, and with respect to the payments they provide to regular handlers for subsidized operations. Any special currency plan, for example, imposes upon participating distributors the burden of handling stamps or coupons. It also provides a mechanism for channeling subsidized sales through selected outlets simply by imposing conditions on eligibility to redeem the currency. Similarly, distributors' returns on subsidized sales may be controlled through redemption of the currency at a discount or premium. Essentially this type of

device was actually used in the Relief-Milk and School-Milk Programs to control handlers' margins on the subsidized sales.

### *Economic Effects of Food Subsidy Measures*

In analyzing the relationships of the different operating characteristics to the objectives of food subsidy measures, we consider first their comparative effects upon consumption by the individual participating consuming unit—in general, the family. We shall then take up their effect on participants' consumption collectively, and their consequent price and market effects.

#### *Consumption of Individual Participants*

For analysis of effects on individual participants, indifference curves provide a useful tool.<sup>6</sup> Diagram 1 represents relationships between food consumption (measured horizontally, in terms of a suitable index of physical volume) and money (measured vertically) as representative of consumption of all other goods and services. Each of the curved lines (indifference curves) connects a series of points representing levels of consumption jointly of foods and other goods that the family considers equally desirable. Successive indifference curves from left to right represent increasingly desirable levels of consumption.

The diagonal straight lines represent what the family can buy at two different incomes, unsubsidized and subsidized, assuming that the price of food is the same in both cases. The lower price line starts at the original level of income (vertical axis) and ends on the quantity of food (horizontal axis) that the family could buy by spending all its income. Each intermediate point along the line shows how much money the family will have left after buying an intermediate quantity of food at the given price. Thus the price determines the slope of the line, the original income its position. The upper price line, having the same slope, represents the same price of food but shows the alternative levels of food purchase open to the family starting with the subsidized level of income.

At each level of income the family will plan to buy the quantity of food indicated by the intersection of the price line with the highest indifference curve that it reaches; this will represent the most

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<sup>6</sup> For exposition of the indifference curve technique, and of the assumptions implicit in this use of it, see Hicks, J. R., *Value and Capital* (Oxford, 1939) Part I, especially p. 33.

desirable consumption pattern available. At the unsubsidized level of income, this will be the point marked "original consumption." With the subsidized income, it will be the point marked "cash

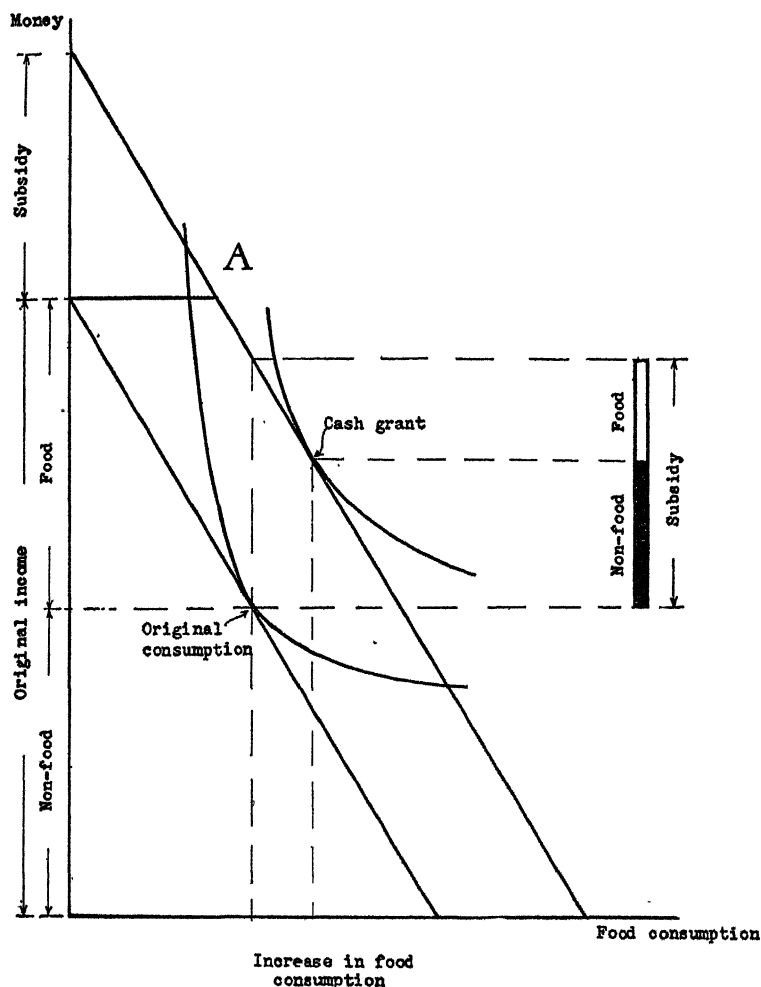


FIG. 1. EFFECTS OF SUBSIDY IN THE FORM OF CASH GRANT ON CONSUMPTION OF AN INDIVIDUAL FAMILY.

grant." Thus the effect of the subsidy will be to increase somewhat the family's food consumption (by an amount represented by the bar at the bottom of the chart) but also to increase its expenditure

for non-food items. The division of the subsidy between additional money spent for food and additional money spent for nonfood items is indicated by the bar at the right of the chart.

We know from consumption studies<sup>7</sup> that percentage of income spent for food averages lower among families of higher income. The diagram represents a family spending half its original income for food but only 47% of its subsidized income; of the subsidy itself, only 40% goes for food. This is probably not atypical of the actual state of affairs under cash relief grants.

It is not a very satisfactory state of affairs, if the purpose of the subsidy is specifically to increase food consumption, to have 60% of it diverted to non-food uses. The same diagram (Figure 1) shows, at least in certain cases, the effect of trying to correct this by giving the subsidy not in cash but in actual food or in grocery vouchers, food stamps, or some other special currency specifically earmarked for buying food. The horizontal distance between the two price lines represents the quantity of food equivalent to the amount of the subsidy at the given price. A family given food stamps or actual food equivalent in value to the cash grant subsidy will thus have, to start out with, the combination of money and food indicated by the point *A*. The family can still choose any pattern of consumption along the upper price line below point *A*. As the diagram is drawn, it will choose the same point as before—the point marked “cash grant.” Giving it actual food or food stamps in lieu of subsidy has not really changed anything. The actual subsidy dollars are all spent for food, but they only release a corresponding amount of the family’s own funds for spending as it chooses. Indirectly, it will still divert 60% of the subsidy to non-food uses.

This condition will prevail unless the subsidy is so large that it more than covers what the family would choose to spend for food at the subsidized level of income. In the case of individual foods, it is possible to do this. In the case of all foods collectively, a very substantial subsidy would be required. Rough estimates based on average food expenditure at different incomes as shown in the Consumer Purchases Study<sup>7</sup> indicate that a subsidy in kind or in food stamps would need to amount to something over one and a half times a low-income family’s total original food expenditure before it would be more effective than a simple cash grant.

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<sup>7</sup> See Consumer Expenditures in the United States, National Resources Committee, 1939. (The assumption is implicit here that a family whose income is increased will behave in the same way as a family originally at the higher income.)

The second diagram shows the effects on the family's food consumption of a subsidy given in the form of a reduction in the price of food. In this case the family starts from the same original income

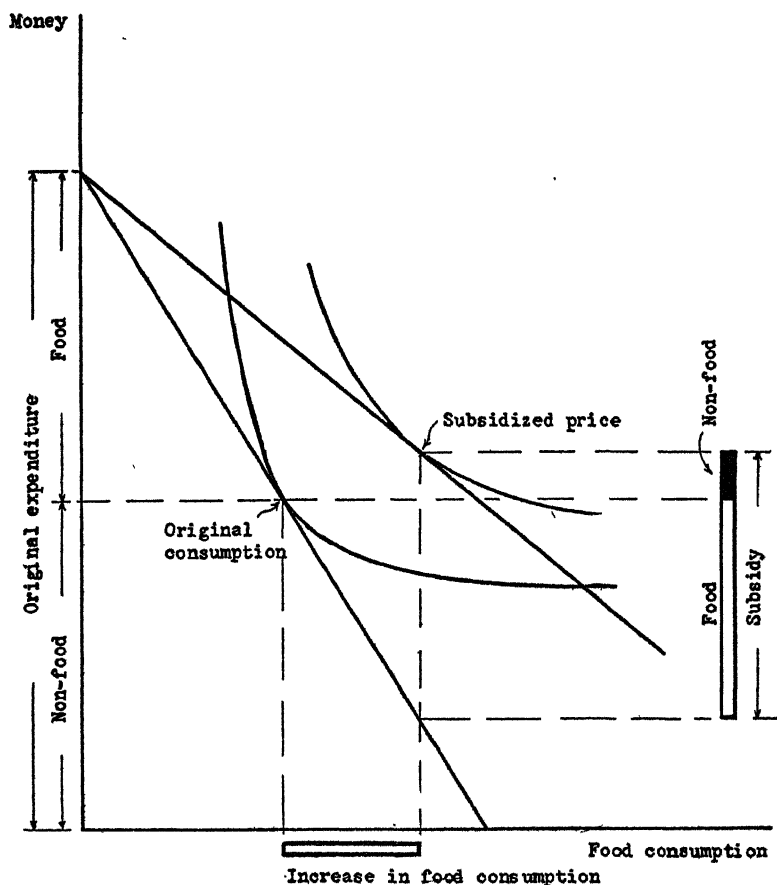


FIG. 2. EFFECTS OF A SUBSIDY IN THE FORM OF A PRICE REDUCTION ON CONSUMPTION OF AN INDIVIDUAL FAMILY.

but the range of choices open to it is shown by a new price line of gentler slope (more food per dollar). The most desirable expenditure pattern that the family can reach along this line is represented by the point marked "subsidized price." The increase in food consumption and the division of the subsidy between food and non-food expenditures are again shown by bars at the bottom and right of the chart.

As the diagram is drawn, some of the subsidy again would be diverted to non-food uses; the family would decrease somewhat the amount of money it spent for food. In other words, the diagram represents a family with somewhat inelastic demand (with respect to price). If the demand were unit elastic, the family would continue to spend the same amount of money for food, and the subsidy would be 100% effective. If the demand were elastic, the family would increase its expenditure for food in response to the lower price so that the subsidy would be more than 100% effective.

In the case of all foods, collectively, it seems likely to the author that demand is somewhat inelastic, and increasingly so at higher income levels. There are probably individual foods, however, for which demand is elastic, at least on the part of most families in certain income ranges.

The third diagram illustrates the effect of freezing the family's own expenditure for food when a subsidy is given it, as, for example, in the Food Stamp Program. A family participating in such a plan finds itself in the position in the diagram indicated by the point marked "frozen expenditure." It has stamps earmarked for food equivalent to the quantity of food it consumed originally plus the quantity of food equivalent in value to the subsidy; and it has cash in hand equal to its original non-food expenditure. It can, if it wishes, spend some of this cash for food in addition to spending its stamps—a range of choice represented by the lower portion of the upper price line drawn on the diagram. As the diagram is drawn, it will not choose to do so and only a family with anomalously high income-elasticity of demand for food would prefer such a choice.

In actual practice, of course, it would hardly be possible to operate a plan so closely tailored to each individual family that its own food expenditure could be frozen precisely at the unsubsidized level. Rates for stamp purchase requirements could at best be established for groups, based on income and family composition. Within such groups there actually would be considerable dispersion of families around the average level.

This will exert a selective influence on participation in the program. Eligible families who normally spend less money for food than the average for the group in which they are classed will have their incentive to participate in the program reduced. For the family represented in the diagram, the highest level at which the family would be willing to have its expenditure frozen through

purchase of stamps is indicated by point *B*. At this level and with the given amount of subsidy, the most desirable pattern of con-

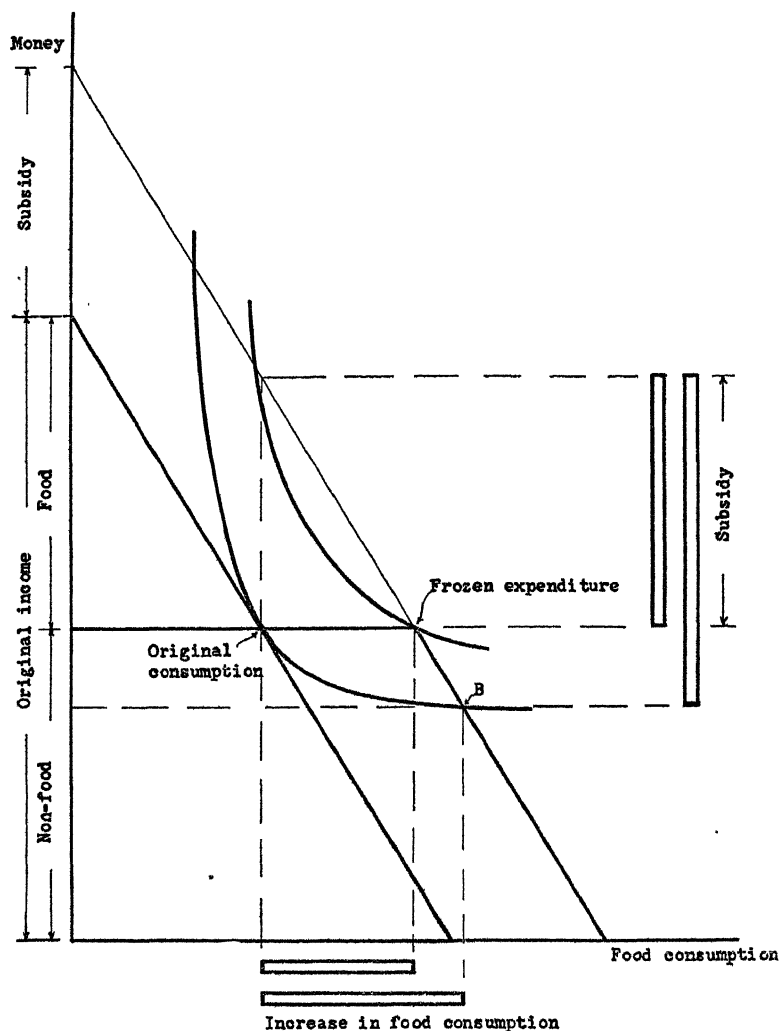


FIG. 3. EFFECT OF SUBSIDY CONDITIONED ON FREEZING OF UNSUBSIDIZED EXPENDITURE ON CONSUMPTION BY AN INDIVIDUAL FAMILY.

sumption that the family could choose would still be on the same indifference curve as its original consumption and it would therefore have no incentive to participate. (Actually, of course, incon-



venience and other deterrents to participation would probably make the family reject the plan even at a somewhat lower stamp purchase requirement.)

The effect of setting stamp purchase requirements on a group-average basis, therefore, will be to make the subsidy less than 100% effective among participants who would normally spend more money for food than the average of the group, and more than 100% effective for those who would normally spend less than average; but participation among the latter group would be cut down because the program would seem to offer them little advantage. Hence, on the average, a subsidy applied in this way would probably be somewhat less than 100% effective.

The arrangement under the Food Stamp Program by which participants could obtain additional free stamps through buying extra orange stamps combines the advantages of a frozen expenditure plan and a subsidized price plan. Participants with inelastic demand buy at the minimum level, thus freezing their own expenditure to this extent. Families with elastic demand are induced to buy at more than the minimum level and the effectiveness of the subsidy in their case will be correspondingly increased. Such an arrangement thus takes advantage of dispersion in the elasticity of demand within the participating group.

The main elements of the preceding three diagrams are brought together into a single chart in Figure 4. As was previously pointed out, the amount of subsidy is represented by the vertical distance between the two parallel price lines. Hence by drawing the diagram so that the expenditure pattern of the family under each different type of subsidy comes out on the upper price line the amount of subsidy is held constant. Different ways of furnishing a family the same amount of subsidy can thus be compared with respect to (1) effect on food consumption (bars at bottom of chart), (2) diversion of subsidy to non-food uses (bars at side of chart), and also (3) the incentive to the family to participate. (The last relationship is shown by the different indifference curves that the family can reach under the different types of programs.) A given amount of subsidy will be least effective in increasing food consumption if in the form of a cash grant; the greatest diversion to non-food uses occurs in this case. (A grant of food stamps or of food itself will have the same low level of effectiveness unless the amount of subsidy involved is substantially greater than that represented in the dia-

gram.) The subsidy will be 100% effective if given in the form of food stamps with the requirement that the family invest its original expenditure in stamps also. (In practice, however, the inabil-

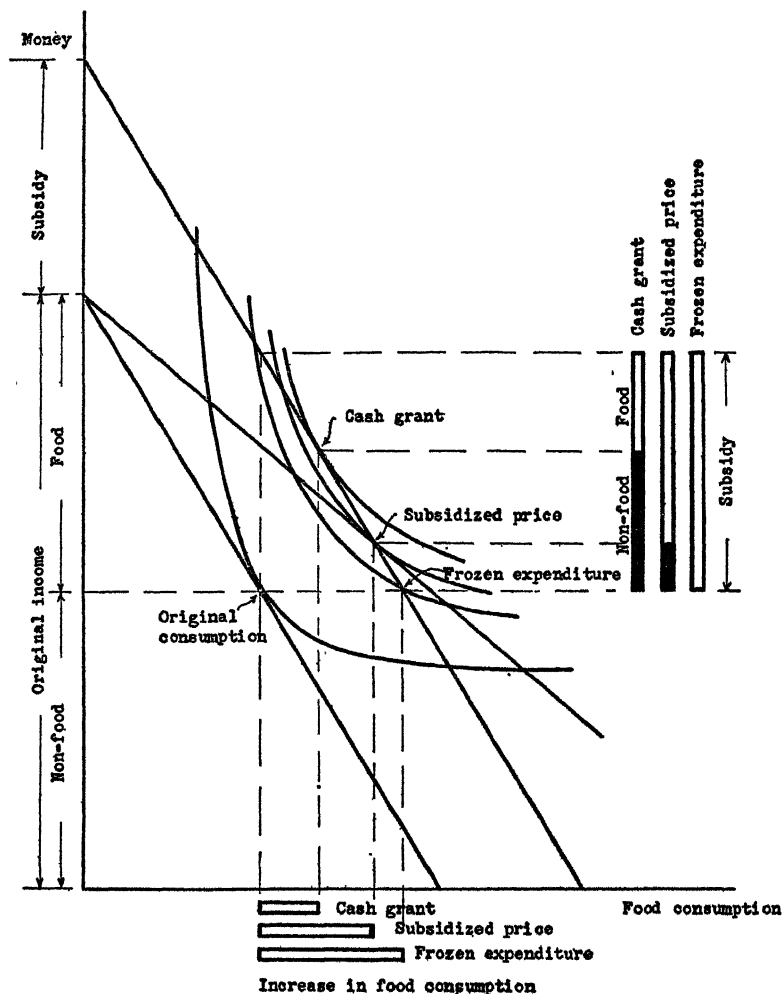


FIG. 4. COMPARATIVE EFFECTS OF A FIXED SUBSIDY APPLIED IN DIFFERENT FORMS ON THE CONSUMPTION OF AN INDIVIDUAL FAMILY.

ity to freeze expenditures at this precise level will on the average decrease the effectiveness of this form of subsidy.) The same amount of subsidy given through a price reduction will be less ef-

fective than under a frozen expenditure plan, assuming that demand is inelastic; if it were elastic, this would be the most effective form of subsidy. The incentive to participate is greatest in the case of the cash grant and least in the case of the frozen expenditure plan. In general, it varies inversely with the effectiveness of the plan in increasing food consumption.

This analysis has enabled us to compare in detail the effects of different ways of restricting the use of a subsidy upon the increase that a subsidy measure will achieve in food consumption by an individual participant. We have drawn certain incidental conclusions regarding the effect of varying the rate of subsidy. In the case of the cash grant, the effectiveness of the subsidy will decrease as the rate increases. In the case of a price reduction, this will also be the case, assuming that demand for food becomes less elastic at lower prices. (There are, of course, individual commodities to which this assumption will not apply.)

Under a plan freezing participants' own food expenditure, the effectiveness probably will not vary much with the rate of subsidy, although to the extent that a larger rate of subsidy will induce greater participation by eligibles whose expenditures are frozen at a relatively high level, it will probably be slightly more effective. Unconditional grants of food stamps or of food itself become much more effective after the point is reached where the grant exceeds what the family would willingly buy anyway at the equivalent subsidized level of income.

Different mechanisms of distribution will presumably change the effectiveness of a subsidy only indirectly through their effect on the rate of subsidy. Mechanisms of distribution that involve rationing by inconvenience will presumably be taken advantage of by different participants in a measure varying directly with the marginal utility of money to the participants. The very poor will find it most worth their while to go to the necessary inconvenience for sake of the resulting savings in their food cost.

### *Collective Increase in Participants' Consumption*

We turn now to the over-all increase in food consumption under programs of different types. This, of course, will equal the sum total of effects on individual participants. Hence it will depend upon the

effect on individual participants, which has just been discussed,<sup>8</sup> and the selection of participants under the program. In the case of cash grants, the total increase in participants' consumption will be greatest if they are selected for relatively high income-elasticity of demand. For foods collectively, we have seen that this means, by and large, selecting those with low income.

The same conclusion holds with regard to grants of food stamps or of food itself. They are equivalent to cash grants up to the point where a subsidy covers what the consumer would buy anyway; and a subsidy that goes beyond this point will be least for low-income families who buy relatively little.

If we assume that demand for food is relatively most elastic among low-income people, we conclude that in the case of a subsidized price, likewise, the increase in consumption will be greatest if participants are selected for low income.

In the case of a program freezing participants' own food expenditure, the basis of selecting participants is immaterial in the first instance. The tendency toward non-participation by eligibles whose expenditure would be frozen at levels above what they normally spend would perhaps be greater, under a given rate of subsidy, at higher incomes, because the given subsidy would represent a relatively smaller inducement to participate. Thus we come to the conclusion that the aggregate effect of a food subsidy on consumption by those participating in the program will be greatest if participants are selected for low income, whatever the type of restrictions imposed on use of the subsidy; with the possible exception of a program under which participants' expenditures are frozen at previous levels.<sup>9</sup>

Different mechanisms of distribution will affect the aggregate increase in participants' consumption through any selectivity they exert on the rate of subsidy to different participants or on the selection of participants themselves.

The analysis so far has been specifically in terms of consuming units, like families, as participants in the program. Some mention should be made of the effects of subsidies to institutional feeding

<sup>8</sup> This neglects the secondary effects of price increases resulting from the program.

<sup>9</sup> To turn this qualitative conclusion into a quantitative formula for the distribution of a subsidy among different income groups so as to maximize the total increase in food consumption would present a much more complex problem.

programs like school lunches. A subsidy to an established lunch program, if no additional children are fed, must be reflected in lower prices to the children, higher quality of menus, higher quality of service, or a reduction of funds provided by the sponsors. Ruling out the latter possibility, a cash grant with no strings attached, a subsidy in food stamps or in kind up to the quantity of food that the management would buy anyway, or the subsidization of lower food prices would presumably all have about the same effect, and this effect would be determined by the policies of the management.

If it was the purpose to direct the subsidy specifically to an increase in food consumption it would be necessary to freeze, through contract or otherwise, the expenditures that the management would make for food without the subsidy.

Where the subsidy enables established lunch programs to feed more children or promotes the development of new feeding projects, an additional element enters to heighten the effectiveness of the subsidy in increasing food consumption. If the subsidy covers only part of the food purchased to serve the additional children, being matched by additional funds from other sources for food purchase, it becomes more than 100% effective.

The question arises to what extent school lunches to children, for example, will cause home consumption of food to be cut down. The importance of such indirect effects will vary from case to case, of course. In general, however, we would expect them to be relatively unimportant when participants in a feeding program are from low-income families. From the nutritionists' standpoint, a well-managed institutional feeding program provides in any event an opportunity for improving, if not increasing, the participants' food consumption.

The analysis to this point has been chiefly in terms of foods as a whole. Formally, it applies likewise to individual commodities, but the conclusions drawn will apply only in cases where the stated assumptions regarding income- and price-elasticities of demand hold. We may say in general that cash grants will be ineffective in increasing consumption of individual commodities because any single food receives so small a proportion of total expenditure. Grants in kind or in currency good only for purchase of a specified food will increase consumption appreciably only after the recipient's preferred level of consumption is covered; beyond that point

they will be nearly 100% effective. To freeze the participating family's own expenditures separately for many individual items of food would require a very complicated program, almost certain to be either inequitable or offensively paternalistic. On the whole, a price subsidy seems likely to be the most feasible for increasing family consumption of individual foods for which demand is not too inelastic.

*Effects on Prices, Total Revenue, and  
Non-Participants' Consumption*

In translating the effects of increased consumption by participating consumers into general market effects, it is convenient to restrict attention to that part of the subsidy that is not diverted to non-food uses. We shall call this part the "effective subsidy." In those cases where the subsidy is so applied as to induce participants to increase their own expenditure for food the effective subsidy will exceed the actual subsidy. In most cases, as we have seen, it will be less. In the analysis that follows we shall also assume the effective subsidy to be translated into its retail equivalent, and shall consider effects on prices and revenues at that level.

We shall examine first the special case where supply does not vary with price (Figure 5a). This probably approximates the situation in the short run for foods as a whole and for most major foods. (In the case of perishable crops, the "short run" can probably be taken as the crop year.) In the diagram this fixed supply is  $Q$ . The (unsubsidized) demand of participants in the subsidy program is represented by  $D$ . The curve  $d$  represents the demand of non-participant consumers, drawn backwards from the line of fixed supply at the right. At price  $P$ , participants (without the subsidy) would buy the quantity  $q_1$ , non-participants the quantity  $q_2$ . Between them they would just take up the total supply, so that  $P$  is the price in the unsubsidized market.

The subsidy will enable participants to buy more food. But to get it they will have to bid it away from non-participant consumers, thus forcing a price increase. The result is represented by the new price  $P'$  and the new division of the supply,  $q_1'$ ,  $q_2'$ . The effective subsidy is shown by the shaded area.

The increase in price that will occur and the shift in supply obviously depend *solely on the demand of non-participants and the amount of effective subsidy*. For a given effective subsidy, if the non-

participants' demand curve is steep the price increase will be marked, the shift in supply small; if it slopes gently, the price increase will be small, the shift in supply great.

The increase in total revenue from the sale of food as a result of the subsidy program obviously amounts to the increase in price applied to the quantity  $Q$ . It is of interest to compare this increase in revenue with the effective subsidy. The latter consists of the two rectangles marked  $a$  and  $b$ . The increase in revenue consists of the two rectangles  $a$  and  $c$ . Hence the difference between the two is the difference between the rectangles  $b$  and  $c$ . If non-participants' demand were unit elastic—if their food expenditure remained constant in the face of a rise in price—these two rectangles would be equal. If their demand is inelastic, so that their expenditure increases as the price goes up, rectangle  $c$  will be greater than  $b$ , i.e., the increase in revenue will exceed the effective subsidy.

This conclusion is of interest in connection with the selection of participants in a subsidy program. If it is assumed that demand for food is less elastic among high-income than among low-income consumers, the price and revenue increases will be maximized by selecting participants in the program for low income. At the same time, the shift in supply will be minimized.

We shall next examine another special case, but one of considerable current importance: the case where price is fixed, for example by the Steagall Amendment. In the second diagram (Figure 5b)  $P$  is the support price (or rather its retail equivalent) and  $Q$  the supply at this price. The two demand curves are drawn as in the preceding diagram. At the support price participants will buy (without the subsidy) the quantity  $q_1$ , non-participants  $q_2$ , leaving the quantity  $s$  to be kept off the market—through production or marketing restrictions or through some form of diversion.

The subsidy in such a situation will simply enable participants to buy some of the surplus. (A large enough subsidy would, of course, push price above the support level.) The food subsidy program thus acts as a diversion outlet, and obviates the need for production restrictions or dumping programs.

Figure 5c shows the general case, where supply ( $S$ ) increases in response to an increase in price. The diagram is drawn in essentially the same way as Figure 1, non-participants' demand being measured backwards from the sloping supply curve. (It represents the

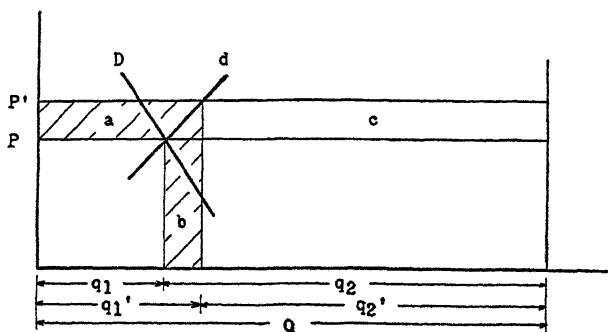


Figure 5a.- Constant supply

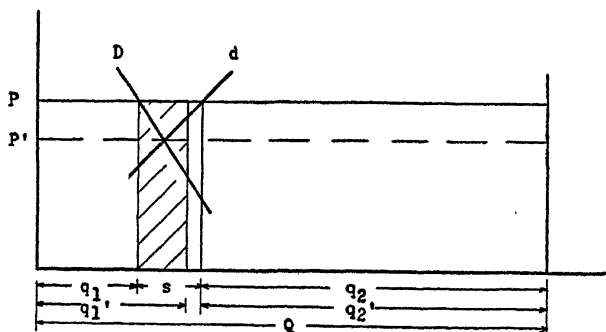


Figure 5b.- Fixed price

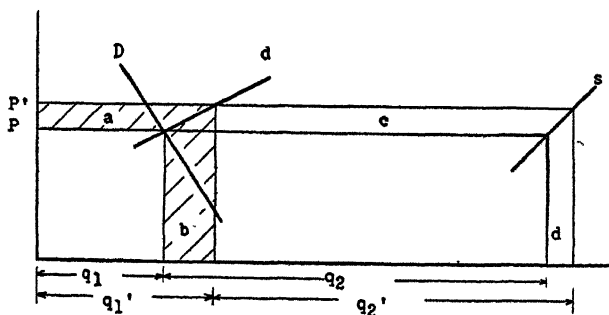


Figure 5c.- Variable supply

FIG. 5. RETAIL PRICE AND REVENUE EFFECTS OF A FOOD CONSUMPTION SUBSIDY.



same demand as in Figure 1.) The result differs from that with constant supply chiefly in that the supply increase takes up part of the subsidized increase in participants' expenditure, thus lessening the price effect and the reduction in non-participants' consumption. (The effective subsidy is drawn equal to that in Figure 5a.) The increase in revenue here includes the vertical strip  $d$  representing the increase in volume of sales. As in the first figure, however, if non-participants' demand is inelastic, so that their expenditure increases, the increase in revenue will exceed the effective subsidy. Hence the same argument applies regarding selection of low-income consumers for participation in the program.

The assumption that demand is less elastic among high-income than among low-income consumers leads also to certain conclusions regarding the varying incidence of a subsidy program within the non-participant group. The reduction in their consumption will be disproportionately incident on those of lowest income. To avoid creating hardships, such programs should therefore be made as fully inclusive as possible of families within the income levels they reach, and preferably should provide benefits on a sliding scale proportioned to need.

The money costs imposed by price increases resulting from a subsidy program, however, will be greater upon those of higher income, who increase their food expenditure most in the face of higher prices. Thus the price-incidence of money costs is in accordance with the common criterion of taxation, ability to pay. Whether this is true of the total incidence of costs, depends, of course, on whether taxation is progressive or regressive under the unit of government furnishing the subsidy.

In the analysis so far we have assumed a subsidy program of restricted participation. We should examine also the effects of a general price subsidy.

In the case of fixed supply, such a program will make no difference to consumers; the price they pay and their consumption will remain unchanged.

In the case where a fixed price is maintained to producers, the subsidy will move into consumption more or less of the surplus. In diagram 5b,  $P'$  represents the subsidized price necessary to move the whole supply. If in this case we divide the buying public into two groups whose demands differ in elasticity (in the diagram,  $D$

is a more elastic demand than  $d$ ), the group with the more elastic demand will obtain a proportionately greater share of the surplus.

In the general case, with variable supply, an unrestricted price subsidy will result in some price increase to suppliers and some price reduction to consumers, with a corresponding increase in both production and consumption; the exact relationships will depend on the relative elasticities of supply and demand. The increased supply will again be divided favorably to consumers whose demand is relatively more elastic.

Thus an unrestricted price subsidy is itself a selective device as between consumers in its effects on consumption. Assuming that elasticity of demand for food decreases with income, a general subsidy to all food prices will increase consumption relatively more among low-income than among high-income groups.

The total benefit to low-income people, as measured by equivalent increase in income, will nevertheless be smaller because their total consumption will still be less than that of high-income consumers.

But if an unrestricted price subsidy is provided out of taxes imposed on a progressive basis the higher-income consumers will more than pay for their greater benefits through greater taxes. (Food consumption increases less than proportionately with income.) Such a program would involve large public expenditures in relation to the benefits channeled to those in need. But its appearance of benefiting those not needing help would be misleading.

The preceding discussion has been in terms of foods-as-a-whole, with little mention of individual commodities. No essential changes would be required in the analysis, as far as it goes, in applying it to individual foods. But different conclusions would be drawn wherever elasticity of demand does not decrease with income.

### *Distribution of Increased Revenue*

We have examined so far the factors determining the "effective subsidy" under different types of measures, and the factors determining the increase in revenue at retail corresponding to a given effective subsidy. This increase in revenue is divided between producers and marketing agents, so that in general their interests are jointly promoted.

How the increase in revenue is divided between marketing agents and producers is admirably analyzed, especially for the short-run

case of fixed supply, in *Economic Analysis of the Food Stamp Plan*, and the author has little to add to that discussion. It is shown there that, since marketing charges increase less than proportionately with increased prices, the larger part of the increased revenue at retail on the original volume of sales goes to producers. On increases in supply, however, marketing agents will receive their normal margins and producers will receive only their normal percentage of the consumer's dollar. Where the mechanism of distribution under a program reduces marketing margins on subsidized sales or, even more, on unsubsidized sales as well, or if distribution is by public agencies that operate at less than normal marketing costs, benefits to producers will be increased.

There are several ways in which subsidy programs might act to reduce margins. Special currencies might be redeemed from distributors at a discount. Where price subsidies are applied at or near the producer level the price reduction there would tend to be pyramided. Plans requiring advance purchase of stamps by participants would shift their marketing to a cash basis, thus eliminating credit costs. (But alternative financing might be necessary to enable them to participate.) Where prices are controlled, as during the war or in normal times on milk in many markets, margins might be regulated directly.

Finally, subsidy programs provide an opportunity for experimentation in lower-cost marketing methods; distribution of relief milk through depots is an example. In the long run, this is the most likely possibility, since arbitrary reductions in margins cannot be sustained except as they are justified by cost reductions.

#### *Relationship to General Economic Policy*

The preceding analysis points up several characteristics of food subsidy measures of importance to general economic and fiscal policies. They provide a basis for fuller employment of resources in a widespread and essential industry, agriculture, which before the war had for many years been depressed relative to the economy as a whole. Because agriculture is typically a low-income industry, the indirect as well as the direct effect of food subsidies is to redistribute income on a more equal basis. Both of these characteristics make food subsidies an appropriate component in a general program of public expenditure to promote full employment.

To the extent that food subsidies are made generally available to

the needy they likewise fit in with a general program of economic security; they safeguard the first essential of living—food consumption. In this connection, if flexibly designed so as to expand and contract with need, they conform automatically with a policy of adjusting public expenditure to compensate cyclical fluctuations in general economic activity.

In these several respects, food subsidy programs would appear to be well aligned with current tendencies toward Government action to correct economic maladjustments and stabilize the social economy at a high level of activity.

### *Conclusion*

The analysis in this paper has been intended to relate certain characteristics of operation of programs to subsidize food consumption with the objectives the programs are intended to serve. To considerable extent this has been done in detail in passing; there remains only to draw together certain broad conclusions.

Food subsidies are intended, on the consumption side, to increase consumption by those of low-income, among whom lack of purchasing power imposes a primary limitation on adequacy of diets. Various operating characteristics have been explored that help make subsidy programs effective to this end.

But it has also been shown that, in general, maximum benefits on the side of production and marketing will result from directing a subsidy to low-income consumers and from restricting the use of the subsidy as closely as possible to food expenditure. It is true that the price effects through which benefits to producers and marketing agents arise tend to reduce the benefits to participating consumers. But the same choice of operating characteristics in general maximizes benefits on both sides.

Consumption, production, and marketing objectives may diverge, however, when narrowed to individual commodities. In the first place, their convergence depended upon the assumption that elasticity of demand is lower at higher income. This will not be the case with all foods. In the second place, there may be disagreement on the choice of commodities to be subsidized. In this connection, there is a difference between what were previously called "cushioning objectives" and "adjustment objectives." Cushioning objectives almost inevitably require specifically tying a subsidy to the individual commodities whose production is excessive. Adjustment

objectives will automatically be promoted by a general food consumption subsidy.

The relationships between consumption and production objectives can be summed up in two rather simple and obvious comments: First, that the easiest and cheapest way to increase the consumption of food is to make it available to those who are hungry; second, that it is easier to increase the consumption of foods people want than of foods that they don't want.

The analysis developed in this paper is general and qualitative. In planning a concrete program, and in checking on its operation, the qualitative conclusions will need to be translated into quantitative rules of operation. To do this intelligently, a great deal more data than are now available will be required. Particularly needed is information on variation with income of demand for food and for individual foods, and on dispersion of demand on the part of individual consuming units within groups of similar composition and income. It is to be hoped that in any food-subsidy programs that may be undertaken provision will be made to fill these needs.

## WORLD AGRICULTURAL POLICIES AND THE EXPANSION OF TRADE\*

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THE world market, on the existence of which so much of our thought and policy regarding international trade has been premised, virtually disintegrated during the thirties under the impact of government intervention. The various national markets were separated from one another or diverted into uneconomic combinations to such a degree that international trade fell far behind its normal relation to production, and world production patterns became greatly distorted.

Interventionist policies had a particularly great effect on agricultural production and trade. They resulted in artificial scarcities in the importing countries and were the principal cause of unmanageable surpluses in the exporting countries. The present war, with its enormous temporary changes in demand and its trade interruptions and diversions, has served to accentuate the distortions in the pre-war production pattern.

Few governments now appear to contemplate withdrawing after the war from their pre-war policies of agricultural intervention. Many are considering strengthening those policies in order to maintain part of their wartime increases in high-cost production, impelled by their obligations to their farmers and, in importing countries, by a war-strengthened determination to maintain a high degree of agricultural self-sufficiency. Some important governments have already taken—or publicly announced their intention to take—steps in that direction.

If we are to have a peaceful and prosperous world in the future, it is recognized as imperative that international action be taken to the end that trade—both agricultural and non-agricultural—may be

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\* The views presented in this paper are in no way official. They are based primarily on my experience in the Office of Foreign Agricultural Relations under the stimulating guidance of Mr. Leslie A. Wheeler. I am indebted also to numerous colleagues, particularly in the Departments of Agriculture and State, who have participated in certain work and discussion of which the effort to prepare this analysis has been in a sense a by-product. I would like especially to mention Dr. Oscar Zaglits, who has thought the whole thing through with me and contributed generously to its formation, Leroy D. Stinebower, who has patiently cooperated in a search for the "hair" of judgment that "perhaps divides the False and True" of our opinions and Drs. Eric Englund and Frederick V. Waugh, who have made many helpful suggestions.

expanded and that production-distribution patterns may be made to conform more nearly with the principle of comparative international advantage. The principal proposals for bringing this about fall into two groups: Those contemplating the withdrawal or substantial relaxation of interventionist policies impeding healthy trade expansion; and those contemplating the coordination of interventionist policies and their use to accomplish trade expansion directly.

At first glance the two approaches appear mutually incompatible, and much current discussion is based on the assumption that such is the case. However, further analysis shows that each is applicable to a different set of conditions met with at different times or in connection with different commodities, and that the two approaches are, therefore, inherently complementary. This leads to the conclusion that, if the nations of the world are to attain a satisfactory post-war pattern of world production and distribution, they must employ both approaches, each in such a way as to facilitate the ultimate success of the other.

## I

### *Interventionist Policies Distorting World Trade*

While the world market as theoretically conceived has probably never existed, there did exist prior to 1914 a very considerable area of the world throughout which it could be said that in a significant degree prices and trade in agricultural commodities were determined by competitive forces. Price differentials were due mainly to differences in transportation and marketing costs and some relatively modest import duties or occasional export subsidies; and, in most cases, there was not enough direct assistance by governments to their farm producers to sustain any large quantity of high-cost production. A transaction in international trade differed from one in domestic trade principally by virtue of involving a few more formalities and nominal charges. There were only a few exceptions, such as the fostering of beet sugar, particularly by Continental European governments, in competition with low-cost cane sugar. This quasi-world market for agricultural products had been growing larger for about a century because of the growth of the world's industrial population, particularly in the United Kingdom, the United States, and Germany. Under these circumstances—a competitive price in a large world market and a substantial upward

trend in demand—the pattern of production of the various commodities tended to conform to the principles of comparative advantage, the expansion in crop production taking place largely in the low-cost areas of such countries as Canada, Argentina, Australia, and the United States.

By 1939, there remained hardly any staple agricultural commodity for which it could be said that prices in all of the important markets were closely related, and in some cases there was no evident relation at all. An international trade transaction had become a complicated politico-economic process. Prices were about as numerous as countries, variations between them were great, and a variety of political permissions were required before one could try to make a profit by moving goods from places of abundance to places of relative dearth. There was often a risk that the costs and conditions of international movement would be altered while a commodity was enroute, and sometimes the only way to gain admission to a market was to make a shipment in the hope that exchange would be made available when it arrived at its destination. Quite a bit of trade was practically intergovernment barter, private traders sometimes acting as agents to carry out transactions for their governments. The parties to a foreign sale of, say, United States wheat, encountered the following more or less new types of elements in the situation by comparison with 1914.:

1. Income supplements which, while guaranteeing a high price to domestic wheat producers in some importing countries, enabled them to sell as far below cost as necessary to undersell imports.<sup>1</sup>
2. Extraordinarily high import duties in some countries.<sup>2</sup>
3. Foreign import quotas, licensing requirements, milling regulations, and other regulations putting more or less fixed limits on the quantities that might be imported.<sup>3</sup>

<sup>1</sup> In 1938-39, the United Kingdom government paid farmers income supplements of about 65 cents a bushel on over 60 million bushels of wheat. Income supplements were also paid in some other countries. Importing countries with government trade monopolies (see note 6) in effect made similar "supplementary" payments.

<sup>2</sup> In 1914, no importing country of significance had a duty exceeding about 40 cents a bushel. In 1938, the general duty exceeded 75 cents a bushel in Austria, Estonia, France, Germany, Lithuania, Poland, Rumania, Turkey, Yugoslavia, Egypt, and Mexico.

<sup>3</sup> Countries with such restrictions included Denmark, France, Germany, Greece, Italy, the Netherlands, Brazil, Sweden, Ireland, Belgium, Finland, and Switzerland.



4. Foreign government exchange controls under which the importer had to obtain dollar exchange from his central bank or treasury before he could go through with an import transaction.<sup>4</sup>
5. Preferential treatment under which importers found import duties lower or government licenses and foreign exchange easier to obtain if they purchased from certain specially favored exporting countries.<sup>5</sup>
6. Government trading monopolies in both importing and exporting countries.<sup>6</sup>
7. Export subsidies under which exporters from competing foreign countries could sell abroad below their domestic prices.<sup>7</sup>
8. The United States loan program which in effect set a domestic price in the United States that tended to be higher than the prices of other exporting countries.
9. The United States export subsidy under which, if the government approved an export transaction, a payment could be obtained sufficient to make the transaction possible in spite of the high United States domestic price.

Some idea of the effect of these measures in distorting the production-distribution pattern may be obtained from the fact that the six countries (the United Kingdom, Germany, the Netherlands, Belgium, Italy, and France) which had been the world's leading importers of wheat (including flour) in the five seasons, 1909-10/13-14, depended on imports for 38 percent of their total requirements in those years but for only 27 percent in the five seasons ended in 1938-39.<sup>8</sup> This is the more striking when one considers that there had been no decrease in their total requirements (although their per capita requirements appeared to have fallen by more than 10 percent). At the same time production in the United States increased 4 percent and that in Argentina, Canada, and Australia taken together increased 49 percent.

<sup>4</sup> Wheat importing countries with such controls included Germany, Italy, Denmark, and Greece.

<sup>5</sup> In some cases, the foreign government was operating directly to obtain as much of the country's wheat requirements as possible from the specially favored countries. United States wheat had to compete for what was left of the market.

<sup>6</sup> Governments having what amounted to monopolies of foreign trade in wheat included those of Argentina, France, Germany, Italy, the Netherlands, Hungary, Rumania, Bulgaria, Yugoslavia, and the Soviet Union.

<sup>7</sup> In the 1938-39 season, governments subsidizing wheat exports in one way or another included those of Canada, Argentina, Uruguay, and Australia.

<sup>8</sup> The decline took place in the thirties. For the years 1924-28 the percentage was

The events that led up to this disorganized market situation, not only for wheat but for most agricultural commodities in one way or another, are familiar to students of international trade in agricultural products.<sup>9</sup> During the first World War, there was a very large temporary increase in demand, especially European demand, for most agricultural products and, at the same time, a disruption in supplies from the war areas and from the more distant parts of the world. This forced an expansion of the production of basic agricultural staples in accessible areas, particularly in North America. The Allied governments took direct measures to stimulate such production, although they also controlled consumption in order to keep the demand down somewhat.

At the beginning of the inter-war period, government intervention was substantially relaxed. When restored production in the war areas glutted the world market, however, and much of the wartime expansion in production persisted in spite of the resultant agricultural depression, there was a gradual reintroduction of government aids. Most of the important producing countries tried to support farmers' prices on a maintained or expanded domestic output, regardless of repercussions on the world situation. However necessary and desirable this may have been from a national point of view, it served to aggravate the basic world maladjustment rather than to remedy it. Moreover, one interventionist measure led to another; price supports had to be supplemented with import restrictions and export subsidies, import restrictions had to be supervised and adjusted, export subsidies had to be increased because they forced down foreign prices, and so on. As a consequence, progressively more interventionist techniques were introduced until there was a decided trend toward practically complete state control of trade.

In the importing countries the output of energy foods was stimulated, without much regard to production costs, until it considerably exceeded pre-1914 levels. The desire to protect domestic producers and restore production was strongly reinforced in these countries by a desire for agricultural self-sufficiency as preparation

<sup>9</sup> For a recent statement of the development of agricultural policies affecting international trade, see L. A. Wheeler, "Trends in Foreign Agricultural Policies," *Foreign Agriculture*, September 1944. See also: Senate Document No. 70, 73rd Congress, 1st Session, "World Trade Barriers in Relation to American Agriculture," "Foreign Agricultural Policies—A Review and Appraisal," *Foreign Agriculture*, January and February 1938. "Price Control in Foreign Countries," *Foreign Agriculture*, February 1939.

against the possibility of another war. Artificial fiber production also was stimulated. Only secondary attention was given to production of the protective foods in which these countries have a greater comparative advantage than in basic products. The principal techniques at first employed were high tariffs and domestic subsidies. Eventually, however, most of the importing countries turned to more rigid techniques, such as mixing regulations, quotas, licensing, and exchange control. The right to import came to be parcelled out not only from year to year or quarter to quarter, but in many cases almost from day to day on the basis of approval of individual transactions or complicated categories of transactions. A number of governments made the importation of certain products a monopoly of the state.

Meanwhile, in the exporting countries, in spite of relatively low prices, there was relatively little reduction of production from inflated wartime levels. In some cases there was actually an increase. Governments began to adopt measures of price or income support. There was keen competition among the exporting countries for the reduced foreign market, and governments aided their producers by various forms of subsidization and currency manipulation. To increase the effectiveness of these measures in the face of short-run fluctuations in prices obtainable abroad, some governments established what in effect were state monopolies of the export of one or more of their principal products. But for many of them, the most effective type of aid in the competition for markets was the negotiation of preferential treatment for their producers in the markets of the importing countries in return for economic or political favors. In some cases, the arrangements amounted to complicated types of barter in which the actual prices obtained and the subsidies involved were almost hopelessly confused.

During the present war, the disruption of supply has been more extensive than in the first World War and the increase in demand has been greater and has extended to more products. Intervention has been correspondingly more complete and far-reaching. Practically all important international trade in agricultural products is directed by governments, and intervention for the control of production has greatly modified the characteristics of enterprise. This intervention has had to be directed toward a further distortion of the maladjusted pre-war production pattern. Production has been expanded with little regard to cost in order to meet the tremendous wartime need.

## II

*Methods of Expanding Trade*

In view of this situation, there is fairly wide agreement on the importance of taking effective steps to bring world agricultural production patterns more nearly in line with comparative advantage and to establish and maintain a high level of world consumption of agricultural products. There is less agreement as to what steps would achieve this objective.

As has been pointed out, the more important proposals can be divided into two groups: Those which contemplate the relaxation of interventionist measures in order to permit world market forces to operate effectively, and those which contemplate intergovernment arrangements for coordinating such measures in order that they may be directed toward the desired objective. The following discussion suggests certain conditions under which each of these approaches can contribute to the improvement of production and consumption patterns. The set of conditions favorable for the one approach is roughly opposite to that favorable for the other, and each characterizes a different portion of the world's economy. Hence, the problem is not to choose between the two, but to determine their spheres of effective operation, their interrelations, and the principles of their successful application.

*A. Relaxation of Interventionist Policies*

Proposals for the relaxation of intervention are based on the arguments associated with the general equilibrium analysis. It is held that, if international trade is unshackled by eliminating duties and subsidies and abolishing quantitative trade controls (such as quotas, licensing systems, and exchange restrictions), the forces of the market will bring the pattern of world production and distribution very nearly in line with comparative production advantage to the benefit of consumers as a whole.

Proponents of this approach realize the impossibility of obtaining the complete elimination of tariffs and subsidies, at least in the near future, but they believe that substantial reductions can be brought about in the types of intervention that cannot be eliminated. They expect this to result in a very considerable improvement in the production-distribution pattern and they hold that, over any considerable period of time, this improvement will be greater and more balanced than can be achieved by international

planning or programming. They contend that the forces of competition in the market place automatically take account of, and weigh against one another, all of the myriad factors relevant to a given production-distribution situation, whereas the human beings managing any type of international arrangement, no matter how well they might be selected, would be unable adequately to appraise all of the factors and would be susceptible to influence and bias.

This approach has been used with a good deal of success in the past. Essentially, it was the British approach to international trade in the latter half of the nineteenth century. It is the approach of the United States Reciprocal Trade Agreements Program. To advance it in the future it is proposed that there be concluded what would in effect be a multilateral (instead of a bilateral reciprocal) trade agreement between all of the countries of the world for the simultaneous relaxation of their trade intervention measures.

The approach has a basic appeal. To many, it seems at first to offer a line of action at the world level analogous to the economic union of our 13 States under the Constitution, although the great differences between the economy of the North American continent of 1789 and the world of 1944 reduces the value of that comparison. To economists, it appeals because of its consistency with the classical assumptions of the static equilibrium analysis on which most of us have been brought up. Certainly, the relative economic freedom offered by this approach is a desirable end in itself. It should be followed aggressively whenever and wherever it can be effective.

But the relaxation approach is not applicable at all times nor to all parts of the world economy. Few of its proponents look upon it as a panacea. Its limitations from an economic point of view are brought out by an examination of some of the assumptions of the *static* equilibrium analysis of economic competition on which it is based and of the implications of those assumptions when applied to a *dynamic* situation. In addition, the approach encounters important political difficulties. In the following discussion of some of those limitations and difficulties, it is not intended to argue against efforts to accomplish the relaxation of intervention where it is applicable.

i. *Production adjustment.* It is assumed that production of a commodity responds reasonably well to price change. Hence, in the area of a dynamic economy to which the relaxation approach is applied, quantities produced must vary in response to price change, rising when an increased price is maintained over a reasonable period of time (and falling when a decreased price maintains) so

that supplies tend to come into a new equilibrium with demand. Under the relaxation approach, this response is one of the basic mechanisms relied upon to readjust the pattern of world production. It is recognized that a great difference exists between different industries as concerns the rate of this response. Moreover, the response to a rising price may be entirely different in degree from that to a falling price. Neither of these points vitiates the assumption as long as the response is sufficient to bring about substantial adjustment within a not too long period. But if the response tends to be slow and inadequate in an important sector of the economy the relaxation approach cannot be relied upon to accomplish the required adjustment.

In many parts of agriculture, while the response to rising prices is generally adequate, there is not enough response to a falling price. For some major crops, there may at times be almost no reduction in total output for several seasons, though prices remain low. Some important factors that contribute to this are of interest in the light of the conclusions of this paper. In most countries, small enterprises predominate in agriculture. Money costs are rigid, consisting in large part of taxes and debt service. Hired labor is relatively unimportant. The farmer and his family are often tied to production on a certain area suitable for a limited choice of products. Capital investment is usually attached to the land. When price falls, the majority of entrepreneurs cannot cut their losses or increase their profits by cutting production. After the present war, it is probable that the great technological improvements of recent years will aggravate this situation, tending to maintain or expand production even if some resources were to be shifted. Finally, the case is made worse by the fact that, for most of the crops in question (and also for most of the readily available alternative crops to which producers might turn), the demand is highly inelastic.

Under such circumstances, market forces increase production when demand is temporarily increased but do not adequately contract it again. Submarginal producers continue producing. Excessive price declines occur. Chronic surpluses develop.<sup>10</sup> Agricultural

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<sup>10</sup> Surpluses may be considered to appear only after government intervention has directly or indirectly kept some supplies from being marketed, or they may be recognized as existing as soon as extremely low prices threaten to produce the sequence of events described in this paragraph. The difference may hinge partly on whether the low price is successful in moving the supply into consumption. Largely, however it is a matter of definition. I tend to use the word, surplus, in the broader sense. An excellent exposition and analysis that uses it in the narrow sense is to be found in Stinebower, Leroy D., *Food as a Facet in International Trade*. Department of State Bulletin, September 10, 1944.

depression tends to be prolonged and to spread to other sectors of the economy. Governments are forced to intervene. The intervention may take many forms, including price supports, income supplements, import restrictions for products on an import basis, and export subsidies; but it is both economically undesirable and politically impracticable to leave farm producers to their plight.

ii. *Prosperity*. The relaxation approach further assumes a high level of world economic activity. This assumption is the counterpart in a dynamic world of the static equilibrium assumption that the total demand for all products is eternally sufficient to employ all useful resources.

In its application, the relaxation approach depends heavily on this assumption in the sense that it requires a certain stability, at a satisfactory level, in the total quantity of purchasing power available to consumers and reasonable opportunity for alternative employment of human and other resources shifted out of high-cost enterprise. In view of the important rigidities in the cost-price structure, if consumer purchasing power becomes substantially contracted and government does not intervene, there cannot be realized, at least over a considerable period of time, that plane of living which the developed resources of the world economy can support. Moreover, if there are violent fluctuations in the level of consumer purchasing power and price, the guide to entrepreneurs in making production adjustments is not a trustworthy one in that it does not reflect changes in requirements or tastes or capacities to produce so much as it does extraneous elements in the system of distribution. The existence of attractive alternative employment opportunities is essential if productive resources are to be withdrawn from the high-cost portions of an overexpanded industry in which prices have fallen below marginal costs. This latter point is particularly significant for agriculture, where many of the resources not needed in the production of one crop will turn to another crop and some of the resources released from livestock production will be added to those producing crops for market. Moreover, with generally declining demand, labor tends to drift from industrial centers to farms. Hence agricultural production *as a whole* tends to be maintained in depression.

The relaxation approach comes seriously into question, therefore, especially as applied to trade in agricultural products, because of the fact that market forces neither prevent depressions nor cure them quickly. This leads to the conclusion that it must be coupled

with an international program for preventing depressions—one, moreover, which does not itself prevent market forces from bringing about production adjustment. It also leads to the secondary conclusion that we must expect a long transition period before the approach can come into full effect in the areas of the economy for which it may be adapted, since it is unrealistic to expect many governments to bank heavily on an anti-depression program until after the program has functioned successfully for some time.

This leads to a discussion of the primarily *political* as opposed to economic, difficulties that confront programs based on the relaxation approach. There are two in particular that ought to be mentioned, the first being very closely related to the subject of the preceding paragraph.

iii. *Self-sufficiency*. I refer to the conviction of governments (more general than is often supposed) that in times of peace they must prepare for war and that this requires them to maintain a high degree of self-sufficiency in food supplies. Food shortages suffered in the present war and the use made of food blockade for political or military coercion have greatly strengthened this conviction. It is hard to think that it will not be a potent political force for years to come in such countries as the United Kingdom and Sweden. It has been advanced as a serious consideration as regards some of the foods in which the United States is deficient. It might be argued that self-sufficiency policies are not in fact as effective or as economical for meeting a war situation as would be a combination of stock piling and fertility-conservation policies, perhaps supplemented by other measures such as the subsidization of the use of certain kinds of farm machinery. It would probably require years, however, to get that proposition accepted widely as a basis of government policy.

Again the conclusion is that the relaxation approach must be supplemented, in this case with an aggressive program for assuring world peace. A start has been made and it is to be hoped that history will write Dumbarton Oaks as such a program. Again, however, it is to be feared that no nation will significantly relax its self-sufficiency programs until Dumbarton Oaks has proven itself. This reinforces the conclusion that a long transition period must precede the effective putting into operation of the relaxation approach, at least as concerns commodities in which governments feel they must be self-sufficient.

iv. *State-enterprise countries*. It is obvious that the relaxation



approach cannot be directly applied to the trade of countries like the Soviet Union, where state trading obscures the relation of prices to quantities imported, exported, produced, or consumed. The advantages of monopoly trading would lead to at least quasi-state-trading by others in self defense. The approach must, therefore, be somehow supplemented if it is to apply to commodities in which trade with such countries is important.

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The foregoing brief discussion of the principal limitations on a post-war effort to expand trade and rationalize production patterns through a relaxation of the policies that have tended to restrict trade and distort production in the past is not intended to obscure the advantages of such an approach nor to suggest its abandonment. On the contrary, even within those areas of the world economy where ultra-market means must be found for adjusting production, facilitating distribution, or attaining certain non-economic objectives, it is important to place maximum possible reliance on market mechanisms as a means of registering such things as consumer choice and relative costs. And in other areas of the economy, it would be unfortunate indeed to sacrifice the vitality and flexibility and progressiveness that characterize entrepreneurs operating in a free market. I consider it a basic principle that the relaxation approach should be applied wherever it has a chance of working. It seems clear, however, that there are a number of areas in which it cannot be expected to succeed. Those here discussed may be summarized as follows:

(1) As concerns products, probably including most important crops, where market forces do not succeed in achieving an adequate decrease in production when there is a decline in demand;

(2) As concerns products in which governments insist upon a substantial degree of self-sufficiency as a measure of national defense;

(3) As concerns products which governments wish to protect from unduly steep price declines in the early phases of depression; and

(4) As concerns products in whose international trade state-trading plays an important part.

For these areas of the economy, it is suggested that it is desirable to supplement the relaxation approach with some type of trade-

expansion, production-improvement program, less long-run in its essential nature.

### B. *The Coordination of Interventionist Policies*

Most programs proposed for supplementing the relaxation approach start from the proposition that, since the types of government intervention whose unilateral use has distorted much agricultural trade and production cannot be gotten rid of for some considerable time after the war, the alternative is to coordinate them and to redirect them to the implementation of a program of trade expansion and production adjustment.<sup>11</sup>

That interventionist agricultural policies cannot be gotten rid of for a long time is attested not only by the theoretical shortcomings of the relaxation approach summarized above, but also by the pronouncements and commitments of governments. These indicate that the retreat from agricultural intervention after the present war will not carry us back even as far as the complex 1939 situation. Many of the war measures to expand production have been accompanied by guarantees, some explicit, some implied, that the government would be responsible for the costs of readjusting; this responsibility will surely require the continuation of active intervention for quite a few years, especially if future efforts to adjust are no more successful than pre-war efforts to deal with what was probably a less unbalanced situation. Some commitments with even longer-period implications have been made. Canada recently established a board with power to support the prices of commodities other than wheat, using trading monopolies or income supplements, for a transition period which government declarations indicate may be of considerable length. She also appears to contemplate a continuation of her state-trading monopoly in wheat. The United Kingdom has guaranteed a market until 1948 at present prices to certain of its livestock producers, and in 1943 the Prime Minister publicly declared that the Government must bear the cost of maintaining after the war at a "reasonable" level of prices the great expansion and improvement that has taken place in British agricul-

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<sup>11</sup> Proposals for the coordination of existing interventionist policies should be distinguished from proposals for the *establishment* of an interventionist policy to control large-scale private organizations (cartels) capable of themselves "intervening" to circumvent the action of the natural forces of the market in a manner contrary to the general interest. The latter proposals relate primarily to the industrial field and are not dealt with in this paper.

ture. Moreover, there is strong sentiment for the continuation of preferential trading within the British Commonwealth and even of some form of government food-trading monopoly such as the Ministry of Food. The Ministry is entering into contracts, by their nature discriminatory, guaranteeing the quantities and prices of some major agricultural products. that the United Kingdom will take during the next four years from certain competing exporting countries. The Soviet Union, of course, will both control and direct its trade, and a number of adjacent countries may adopt similar systems. Such policies as these will not eliminate, indeed will tend to perpetuate, serious agricultural maladjustment and, therefore, even if temporary in intent, they will again lead to trade wars. They must be coordinated and redirected.

The essential proposals of the coordination approach are (a) that, where conflicting national programs threaten trade wars, international agreement on a world program be somehow reached and (b) that means be found to direct these world production-distribution programs along the lines of comparative advantage and consumption expansion.<sup>12</sup> It is hoped to accomplish this through an international organization operating on working rules and principles that would be formulated and accepted internationally. Some tentative suggestions have been made as to the nature of those rules.<sup>13</sup> It is thought that, under the present impetus to collaboration for world security and freedom from want, these suggestions might provide the basis for an international discussion looking to their elaboration as a body of accepted principles and to the establishment of the proposed international organization.<sup>14</sup> The

<sup>12</sup> For an early presentation of the approach, see Wheeler, L. A., *Agricultural Surpluses in the Post-War World*, *Foreign Affairs*, October 1941, p. 87 ff.

<sup>13</sup> See Black, John D., and Tsou, Stanley S., *International Commodity Arrangements*, *Quarterly Journal of Economics*, August 1944, pp. 521-52.

<sup>14</sup> The Interim Commission on Food and Agriculture, in its First Report to the Governments of the United Nations, Washington, August 1, 1944, did not recommend that this function be lodged with the proposed permanent Food and Agriculture Organization but instead "that international commodity arrangements for both agricultural and non-agricultural products be coordinated under the supervision and direction of a single international authority" and "that principles governing international commodity arrangements for all classes of products should be formulated by a special international conference and that thereafter there should be established an international authority to review in the light of experience the application of the principles so formulated and to coordinate and supervise the administration of individual commodity arrangements." This was on the basis of the need for applying the coordination approach to some non-agricultural commodities. Some basic organizational problems are discussed in Elliott, F. F., "Redirecting World Agricultural Production and Trade Toward Better Nutrition," this JOURNAL, February 1944.

principles would, of course, be improved on the basis of experience in applying them.

It is difficult to assess the possibilities of the coordination approach, since it has never been tried. Past efforts by governments to avoid trade wars have been extremely limited and, in most cases, unsuccessful. In the main, their objectives have been market-allocation and price-maintenance. Nevertheless, they have revealed important difficulties and dangers which some fear may be inherent in the coordination approach. Primarily, these fears relate to (i) the tendency for commodity programs to be "restrictive" because of overemphasis on the short-run producer interest at the expense of the general interest, and (ii) the tendency for government intervention and control to perpetuate and extend itself.<sup>15</sup> In discussing each of these difficulties, it may be useful to review some of the proposals made for dealing with it.

i. *Restrictiveness.* The reasons for fearing that commodity discussions will always be dominated by the producer point of view, even when that point of view conflicts with the general interest, are well known. Governments usually tend to be held more strictly accountable to their producer interests than to the general public; an expert who knows a commodity situation well enough to participate in the preparation of a detailed trade and production program will usually be oriented toward the producer view and will seldom be trained in general distribution problems, such as those of the maintenance of consumer purchasing power and the balancing of international payments; and, finally, the principal measures for the expansion of consumption lie largely outside of the field of any one commodity, although they call for some shift in the production-distribution patterns of most commodities. Hence, it is feared that no program will be drawn up, agreed to, and carried out if it calls for shifting high-cost producers into other lines of activity. There will be concern for both the producers to be shifted and those already in the alternative lines of activity. Resistance will be especially great by the importing countries, in which the bulk of the high-cost production usually is found. These countries will resist to assure their basic agricultural self-sufficiency in case of war as well as to protect the interests of their producers. Neither is a program apt to be agreed to if it calls for price reductions to pro-

<sup>15</sup> For a recent statement of the difficulties, see Davis, Joseph S., *After the War: Free Trade or Control*, *British Columbia Financial Times*, Sept. 2, 1944, p. 4.

ducers within the participating countries, no matter how necessary this may be in order to expand consumption.

Proponents of the coordination approach admit this difficulty, although they think it is overstated in the case of the agricultural products that would be the proper subject of the coordination approach. Producers of these commodities, as has been pointed out, have no incentive to be restriction-minded. On the contrary, they want to produce, and they do produce—abundantly—even in depressions. Hence, their only important conflict with the general point of view concerns the price of their products.

Past commodity agreements arose out of difficulties being experienced by producers in exporting countries. Prices were low. Quantities purchased, even at the low prices, were substantially below quantities produced.<sup>16</sup> Importing-country governments had cut down on imports. Exporting countries had been unable to cut production very far and they were fighting for what remained of the importing-country markets. When they came together in international discussions, they had little choice but to allocate the market and agree on price floors. Under the circumstances, they had to try to restrict production also, but they had little significant success with agricultural products.<sup>17</sup>

Under the coordination approach, to overcome this tendency to emphasize the producer view, it is suggested (a) that, in the international organization for achieving agreements and keeping their operation under surveillance, there be strong representation of the consumer point of view (at least to the extent that it coincide with the general interest) both through the participation of importing countries and of international civil servants, (b) that tests be worked out of whether a program tends to modify a production-distribution pattern in the direction of the theoretical equilibrium position under economic competition and that these tests be reduced to certain rules and principles of action and accepted at an

<sup>16</sup> Quantities not harvested, or allowed to deteriorate, because prices would not cover normal processing, storage, and handling costs are here considered as having been produced.

<sup>17</sup> For a history and analysis of past commodity arrangements, together with texts of agreements and other documents, see International Labor Office, *Intergovernmental Commodity Control Agreements*, Montreal, 1943.

For a summarized analysis of the experience under these agreements and their implications for the coordination approach, see Black, John D., and Tsou, Stanley S., *International Commodity Arrangements*, *Quarterly Journal of Economics*, August 1944, pp. 521-52.

international conference held for the purpose of establishing the organization. Representation of the importing countries would be particularly effective in the case of commodities such as cotton and certain tropical products not produced in the large importing countries. The participation of civil servants could be very effective if they were well selected and armed with well-formulated rules and principles that had received international acceptance. One proposal envisions the establishment of a small "international commodity commission" of distinguished persons selected on the basis of a reputation for constructive breadth of view more than specific commodity experience. The commission would be responsible to a world economic organization such as the economic commission provided for at Dumbarton Oaks, and would serve as the head of an international secretariat. The international secretariat would include the secretariats of commodity councils, similar to the International Wheat Council, on which would be represented all countries having a substantial interest in the production or consumption of an individual commodity. A member of the commission would sit with each council. He would have no vote but would have the right to be heard. The secretariat would prepare the agenda of meetings of the various councils and would implement agreements reached. Agreements would be published, as would all facts relevant to their operations. Hence, there would be ample opportunity for ensuring consideration of the general interest, especially if there were available a set of principles to serve as a guide.

Most of the working rules and principles for testing whether specific programs would tend to improve production-distribution patterns would probably have to be "directional" rather than quantitative, since the equilibrium position (corresponding to the comparative advantage distribution of trade) is probably never measurable in practice and would certainly not be so for commodities subject to government intervention. For example, there could be a set of rules by which to judge whether a program tended to maximize consumption, another to judge whether it was aggravating a surplus situation, and still another as to whether it tended to minimize marginal production costs.<sup>18</sup> Since these objectives were agreed

<sup>18</sup> For an analysis of important dangers which the rules would have to provide against, see Davis, Joseph S., *International Commodity Agreements in the Post-War World*. *American Economic Review*, March 1942 Supplement, especially pp. 400-3.

to, at least by implication, at Hot Springs, the principal problem would be one of getting agreement on methods of measuring progress toward them. }

The adequacy of consumption might be approached through per capita consumption comparisons, the height of prices to consumers in relation to costs and incomes, and desirable levels of nutrition. The question as to the aggravating of surpluses might be approached through changes in buffer stocks and perhaps also prices for some commodities. Rules as to production costs would be a problem because of the difficulty of measuring costs, their complexity and variability, and the sensitiveness of producers on this question. Some elements to bring in might be the relative profitability of different crops, and willingness to produce and sell at different price levels. There might also be rules relating to types of intervention from the point of view of their effect. The superiority of direct, commensurable types as opposed to concealed types is an example. Methods of making interventionist measures remedy basic situations, such as paying more attractively to shift producers than to keep them overproducing, might be reduced to rules and principles. Whether reducible to rules or not, the practice might develop of granting special international favors, such as increased loans by the International Bank, to compensate countries which shifted out of a particularly great amount of high-cost production. The foregoing may suggest some of the possibilities.

The rules would have to be flexible enough to allow for application to real situations. They would have to be subject to modification by agreement in the light of experience. They would have to envisage gradual progress toward accomplishment of the limited economic job of adjustment and trade expansion that is proper to this type of international agreement.

ii. *Perpetuation of controls.* This brings us back to the fear that controls tend to perpetuate and extend themselves, and that the coordination of controls will accelerate the process. One of the reasons sometimes given for the failure of past commodity agreements to accomplish their objectives (whether or not desirable) was the lack of sufficient control over domestic production and marketing by the governments of some of the member countries. This is probably a characteristic situation. All programs will have to be varied from time to time because of changes in areas of the economy not subject to control and because of other unpredictable circum-

stances; all administrators of the detailed types of control will be human and will make mistakes. From the purely administrative point of view, the easiest solution in either case may be to extend the area of control. The case for doing so is often very plausible. While agricultural production is probably more difficult to control effectively than is any other part of the economy, there is a real problem of assuring that international agreements for the coordination of intervention will be temporary.

If the shortcomings of the relaxation approach that make such agreements necessary were going to be confined to the period of transition to peace, the case might be easier. But even after economic activity is on a high and dependable level and world security is assured to the point where self-sufficiency policies are relaxed, there would presumably be cases where the failure to adjust to substantial demand shifts would call for application of the coordination approach until adjustment had been accomplished. What one proponent calls a "standby" organization would have to be ready to develop an international program when needed to prevent an exaggerated price decline from continuing over a considerable length of time and resulting in an area of depression.

Hence, there must be working rules and principles, internationally agreed to, that specify tests, as objective as can be devised, embodying the following basic propositions: (a) international programming should be applied only when certain types of maladjusted situations arise; (b) the programs should call for intervention only to the extent required in order to accomplish their basic purpose; (c) the programs should, if possible, be designed to terminate the maladjustment which made them necessary; and (d) they should be withdrawn as soon as that has been done. Only thus can the organization and procedure proposed become a helpful supplement to, rather than an encroachment upon, a free economy.

### III

#### *Toward a Dynamic Synthesis*

The necessity for applying special measures of government intervention to important sectors of an essentially free-enterprise economy in order that the other sectors may continue to function effectively is not a new or unusual concept. In the field of public utility policy, it has long been accepted. The development of the rules of public utility regulation and the exploration of the interrelations



between this area of government intervention and the free market economy are fairly well advanced.

Moreover, the analogy with the coordination-relaxation relationship goes farther. In both public utility operation and certain kinds of crop production, an important feature making intervention necessary is the existence of high fixed costs leading to the maintenance of production in spite of declining prices. Thus, among public utilities, the absence of intervention leads to duplication of facilities and cut-throat competition, threatening bankruptcy to the competitors and interruption of necessary services; while in many parts of agriculture, it leads to chronic surpluses, threatening important areas of depression. In the case of the great majority of public utilities, a regional or localized market is involved and there has been no international complication to obscure the nature of the problem. Hence, control measures are usually as wide as the market. In agriculture, on the other hand, the market involved is the world market. Many of the agricultural policies that have distorted trade represent necessarily inadequate efforts by governments to deal with the world-wide problem on a partial, national basis.

International trade economists have tended to overlook this feature of those agricultural policies. They have concentrated on the fact that the policies sheltered certain groups or interests from the full effect of market forces, and they have taken it for granted that this fact was sufficient to condemn the policies—lock, stock, and barrel. Elimination of these policies has been looked upon as a necessary condition for the expansion of trade and the restoration of rational production patterns. We have seen the flaws in this reasoning. Under the conditions of world agriculture after the war, peace and prosperity will not be assured by the elimination of all national efforts to deal with existing maladjustments but by the coordination of these efforts into a world-wide effort.

It will be unfortunate if the basic objective of rationalizing the world economy as far as possible in order to obtain the advantage of maximum efficiency of production and the highest possible planes of living is obscured by an inability to reconcile the existence of interventionist techniques in some areas of the world economy with the existence of relatively free enterprise in others.

Institutions must be developed that will permit the realization of the desired production-distribution patterns through the joint

application of both techniques. In the development of such institutions, it is of basic importance that the advantages of the equilibrating mechanism of the free market be secured to every portion of the economy in which that mechanism can be made to operate effectively. The operations of a fairly free market have permitted a revolution in techniques of production to be accompanied by a revolutionary rise in our planes of consumption. The focusing of attention on the problems of coordinating intervention in the areas where it is needed should never be allowed to obscure the need for preserving this basic value of the competitive system. The problem is to permit both the maximum feasible use of competitive forces for the integration of future advances in technology into the world's economy and the use of internationally coordinated intervention to maintain and expand activity in those areas of the economy which otherwise would be sources of disturbance and depression.

## THE RELATION OF PUBLIC TO PRIVATE LENDING AGENCIES (IN AGRICULTURE) AND RECENT TRENDS IN THEIR DEVELOPMENT\*

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THIS topic is not one that lends itself to a conclusive statement. One's attitude toward private as against public activity depends on his personal philosophy, his particular interests, and the phases of the problem with which he is most in contact. The man who has spent his life as a private banker is likely to be more keenly aware of the contributions made by bankers than are farmers and the general public. Also he is likely to overlook some of the defects of private credit agencies which may be very prominent in the minds of debtors and of disinterested students of the problem. Administrators of public agencies, on the other hand, must inevitably think defensively in regard to the operations carried on by them; and, since they are human beings like the bankers, they will tend to exaggerate the good features of the public agencies and to minimize their shortcomings. Both groups are likely to base their judgments on short-run considerations and to overlook the longer-term significance of this or that plan of operation.

In discussing the problem I am forced, therefore, to present a somewhat personal view though I shall attempt to bring out the advantages and disadvantages of each of these ways of providing credit for agriculture. However, in order that you may be somewhat aware of whatever biases I do have, I will say at the beginning that in general I prefer to see business handled on a private basis unless there are clear advantages in handling it through public agencies. On the other hand, it seems to me essential that we avoid any simple contrast such as that of "Private Enterprise" on the one hand, or "Socialism" on the other. Throughout the history of this nation there has been discussion and action looking to providing some services through public agencies while leaving others to private enterprise. Changes of this kind have gone on in "Conservative" administrations as well as in those designated as "Liberal" though not at so fast a rate. In wartimes and during depressions, the movement toward public management of activities has been accelerated.

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In peacetimes and in periods of prosperity the trend has often been the other way. The net result, however, has been an increase in the scope of governmental control and management. The fundamental consideration seems to me to be that of doing through private enterprise the things that can best be done that way, and doing through public action the things that can best be done in that way. Neither procedure is inherently "right" or "wrong." Both have advantages and disadvantages. Each procedure is better than the other in some fields.

The reason for my leaning toward private enterprise, except where there is clear need for public action, stems from an awareness of the human limitations where public administrators all too often have not gone through the hard schooling of responsible management of business affairs. In my view, administrative ability is one of the scarce elements in human affairs, and we need to use as fully as we can the initiative, ingenuity, and imagination that are available. Where activities are too highly centralized in a government agency, there is some tendency to fail to use in the fullest measure the management abilities and intelligence that exist in the population. The use of ingenuity and initiative tends to be limited too exclusively to that possessed by a few people who may have been placed at the top as a result of great merit, as a result of political influence, or perhaps by the mere chance of having made an impression on those who have the power of appointment.

Such limitations become more apparent as governmental agencies grow older and lose the services of those who initiated them. The earlier stages are more likely to be characterized by over-optimism, naivete, and inexperienced management. It is only fair to say, however, that these same sorts of limitation frequently are to be found in large-scale enterprises that are non-governmental, in other words, in large corporations.

Those who have more faith than I in the wisdom of government administrators, in the absence of undesirable influences in their selection, and in the rightness of doing things through government even at some cost in efficiency, will not find themselves wholly in accord with some of the views here expressed. I hope, however, to avoid presenting either a defense of private operation or an argument for public management as an end in itself. The aim is rather to try to see what division of labor between these two ways of doing things will best accord with the public interest. There is, of course,

a large middle ground in which the advantages may be relatively small either way. As stated above, my leaning in such cases is to leave the activity in the hands of private individuals if possible, using such controls as may be needed in the public interest.

In discussing this problem it may be helpful to trace briefly the development of governmental participation in the provision of agricultural credit. In the United States the first approach on a comprehensive and well-considered basis came about through the creation of the Federal Land Bank system in 1916. To be sure, abortive efforts to provide agricultural credit through state action had been undertaken at various times before then, but most of these earlier programs were poorly planned, poorly administered, and soon abandoned.

The Land Bank system, on the other hand, resulted from a long-felt need, was based upon careful study and debate, and had back of it a long history of precedent and experience, particularly in Germany and France. Its roots went back to the successful establishment of the German *Landschaften* by Frederick the Great in 1770. The system set up for the United States, like these earlier forerunners, was not based on straight governmental loans, but rather on the principle of cooperation, with government aid and supervision. It contemplated eventual ownership by the borrowers with the government providing only general supervision and the necessary legal authorizations and restrictions. From the beginning however, some financial aid was provided by the government both directly and indirectly. Practically all of the original capital was subscribed by the government, and the general supervision through the Federal Farm Loan Board was supplied at public expense.<sup>1</sup> An indirect subsidy was provided by exempting from taxation the bonds to be issued.

During the early years of the Federal Land Bank system the competitive influence of the government's participation in agricultural lending operations was modest. It did not affect private lending operations very significantly. In fact, the more private phase of the system, namely, the network of joint stock land banks, for a time seemed likely to overshadow the cooperative system.

The creation of the Federal Intermediate Credit Banks in 1923

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<sup>1</sup> The Farm Credit Administration units now pay out of their earnings all supervisory and examination expenses. The Federal Intermediate Credit Banks pay for the use of government capital an annual franchise tax based on their earnings.

marked a more definite step in the way of government competition in the lending field. This legislation came about largely as a result of the sudden contraction of private loaning in the acute agricultural depression of the early twenties, and grew out of a feeling on the part of the farmers that they must have a more dependable source of operating funds. In the Intermediate Credit program the government provided the capital of the banks without provision for its retirement as in the case of the Land Banks. As a whole, however, the pattern adopted was in keeping with that of the established banking system and the subsidy aspect was not sufficiently large to make it a serious competitor of the private banks.

During this period before 1930 other steps were taken which put the government much more definitely into the lending business, but these were assumed to be temporary arrangements to meet specific emergencies. Among them were the frequent appropriations for feed and seed loans to aid farmers who had suffered severe physical damage to their crops, and the revival of the War Finance Corporation. The War Finance Corporation activities of the early twenties were intended primarily to save the banking structure in the rural areas during the depression that followed World War I. Some indirect advantages to farmer borrowers did result, however. In 1930 the Reconstruction Finance Corporation was established on very similar lines but with a broader task which included aid not only for agriculture but for other parts of the economy as well.

These measures were all initiated with a view to meeting current emergencies. They established precedents, however, which led to more and more frequent use of government aids of this kind. Feed and seed loans which were originally provided as a means of dealing with localized physical disasters came to be applied generally to aid in meeting economic disaster such as that of the early thirties. Later on something of the same general point of view was carried over into the Farm Security Administration. The basic objective back of most of these measures was that of providing direct government loans to farmers who lacked adequate security for procuring loans through the regular lending agencies. Where the aim was to rescue private banks from disaster, the principal procedure was to absorb short-time paper and allow a longer term for repayment than could be granted by the banks.

Throughout most of the two decades following 1920 there was,

however, a tendency to provide more and more government aid. In 1930 the government subscribed an additional one hundred million dollars for purchase of stock in the Land Banks and also some thirty million dollars to enable the Land Banks to give borrowers more time without jeopardizing the standing of their bonds. By 1933 and 1934, when the full effect of the depression was being felt in the farm mortgage and intermediate credit fields, more far-reaching measures were undertaken. Among these were the granting of subsidies for the purpose of lowering interest rates on farm mortgages, the establishment of the Production Credit Corporations, with the government providing the bulk of the capital, and the creation of the Banks for Cooperatives with the government supplying most of the capital and some of the loan funds. In addition commissioner loans were provided at rates of interest below those commensurate with the risks involved on second mortgage loans of this type. As these steps were taken one after another the government was carried more and more deeply into the farm credit field, and the general attitude of the Congress, and of farmers, with respect to self support on the part of agricultural credit agencies was modified.

The first governors of the Farm Credit Administration adhered to the goal of eventual borrower ownership and self support on the part of the agencies set up by them. The Federal Farm Mortgage Corporation established to provide, with Reconstruction Finance Corporation funds, a market for Federal Land Bank bonds, was intended as a temporary agency with the thought that the Land Banks would presently be able again to sell their bonds directly in the open market and charge a rate of interest which would enable them to handle their loans without subsidy other than that involved in the tax-free feature of the bonds. Congress, however, continued to provide for the maintenance of an interest rate lower than that required for servicing the bond issues and maintaining the Land Banks. The joint stock Land Banks, unable to maintain their solvency as privately financed institutions, began to lose ground and presently were liquidated. The general drift was toward a larger and larger participation by government in the business of providing mortgage credit for agriculture.

Few will deny that this was a logical and necessary step under the conditions existing in the middle Thirties. It is evident also that the Land Banks will and should continue to play a larger part

in farm mortgage financing than they did prior to 1930. There is reason to question, however, the need for continuing subsidized interest rates on farm mortgages into a period such as that following 1940. If the Land Banks are to act as a stabilizing influence in the farm mortgage field it must be expected that their loan volumes will vary considerably with changing conditions in agriculture. This should not be regarded as a defect in their operation, and if some financial aid is necessary to enable them to function in that way, good arguments can be made for it as a socially desirable expenditure.

For short-term and intermediate credit provided through the Farm Credit Administration the basic legislation contemplated a cooperatively owned system which would be self-supporting after the initial period of development. If competition of this kind was to be developed there seems little warrant for criticism of this procedure since it was necessary for the new system to get established on a competitive basis in a field in which the commercial banks already had an established position. Criticism might be leveled at the system on the ground that credit needs of this kind were adequately met by the existing banking system. Farm groups and the Congress felt, however, that there was a need for additional loan facilities. If we accept that view the principle involved in providing funds which do not make a normal return in the early stages or on which some losses may be incurred is not substantially different from that which applies when a strongly financed private competitor goes into such a field. The charge of unfair competition becomes more significant, however, if such aid, either in the form of free capital or other subsidies, is continued indefinitely. This would imply that the cooperative system is not able to compete on even terms even after it is well established. In that case the justification, if made, must rest on other grounds such as a social gain from maintaining competition even at some public expense, or the stabilizing effect of having a network of governmentally sponsored credit agencies in this field of loaning activity. There may well be difference of opinion also as to how long an initial period of public support is reasonable and how much public support should be given.

Whatever may be the attitude on these matters we find ourselves now with a comprehensive set of lending institutions presumably capable of meeting most of the credit needs of farmers except possibly those of very short-term which the private banks are obvi-



ously well equipped to handle. There is still considerable public investment in nearly all of these agencies and they have come to be very real competitors of the private banking institutions. The initial step of setting up the federal agencies has been taken. The pertinent questions to be raised are not whether they should be established but rather those relating to the basis on which they should operate from here on.

It is evident that much of the emergency financing of the middle Thirties was desirable and in fact necessary not alone from the standpoint of farmer borrowers but in the interest of private banking institutions as well. Many mortgage loans held by private agencies were transferred to the public agencies during that time, thus enabling the private agencies to improve their financial condition and permitting farmer borrowers who might otherwise have lost their farms to retain possession of them. With the greatly enhanced incomes arising during the present war period, many of these farmers have been able to put themselves in a good financial position such that they would be good risks for any lending agency whether private or public.

The institutions established by the government have for the most part had both time and opportunity to become well established. Should they now be expected to operate on an entirely self-supporting basis and with a large measure of borrower control, or are there sufficient advantages in having much of the agricultural credit of the country handled through public agencies so that the continuation of subsidies and special government aid are warranted? It can be assumed that if the agencies established through public action were able to maintain themselves and to secure business in direct competition with private agencies but without financial aid from the government, this would be a fairly clear indication that they are more efficient. If, however, they cannot draw business away from the private agencies without financial aid from the government, consideration must be given to the advantages gained through support of the public lending agencies as against the costs incurred by the government.

There may be warrant for repeating that neither government nor private enterprise is a goal in itself. These are merely two different ways of doing the same things. There are many examples of activities in which the public has accepted quite generally the view that operation by the government is the best and most economical

procedure. To mention only a few, we may refer to school systems, road systems, police departments, tax collection, fire protection, care of defectives, provision of recreational areas, etc. In these realms the major public problem is that of improving administration, not that of returning them to private endeavor, although nearly all, if not all, of them have at one time or another been provided through private initiative.

There are other fields in which the desirability of public action is more controversial. Among these are such things as electric power development, power distribution, credit, insurance, transportation, etc.

There is a third category in which majority opinion seems definitely to favor operation through private enterprise. Among these are such things as industrial production, retailing, farming, foreign trade, wholesaling, and many service activities. These are realms in which success hinges largely upon aggressive management which can recognize new needs, develop new products and methods, carry on aggressive sales programs, and deal effectively with the complex problems of relations with labor.

Agricultural credit clearly falls in the middle group; hence its controversial nature as a field for exploitation by public agencies as against private. Certain problems arising out of the private management of credit have come to be clearly recognized. Among these are the instability of the funds which can be loaned. Banks depend heavily on funds supplied by their depositors and on credit which they are able to create through the granting of loans that in turn increase bank deposits. It is an elementary consideration of banking that the depositor must be able to withdraw his funds when he wishes to do so. Hence long-term loans made with such funds are likely to put either the banker or the borrower, or perhaps both, in an awkward situation if anything happens which will cause general withdrawal of deposit funds. While much of the credit supplied by banks is not actually a transfer of savings deposited with the bank, the curtailment of this bank created credit in times of stress may be even more drastic than if the funds were all derived from deposits made by savers. As a result, banks have in the past tended to make mortgage loans on a rather short-term basis, much shorter in fact than is required for the farmer to pay off the loan. The borrower has thus been exposed to the risk of a demand for payment of his loan at a time when he neither can pay it off nor

get loans from an alternative source. His desire to be assured of a loan of long enough term to permit orderly retirement of it is entirely understandable and certainly in the public interest. Whether private banks can adjust their operations so as to provide this assurance is an open question in view of the way in which their loan funds are acquired or created.

Another objection frequently mentioned is that the interest rates charged on commercial bank loans tend to remain much the same regardless of the level of rediscount rates or the rates paid on time deposits. I am speaking now in particular of loans to farmers.

There has also been some tendency for borrowers to feel that decisions both as to granting loans and as to renewals are sometimes made arbitrarily and without due regard for the legitimate needs of the borrower. Ulterior motives have not always been absent. Concern has also been expressed that banking might come to be monopolistic within given communities and even over considerable areas, partly through the crowding out of competitors and partly through general understandings reached by bankers as to rates of interest to be paid or collected, amounts to be charged for services, etc.

There is also an understandable feeling on the part of many students of agricultural credit, based in part on the experience of the twenties, that when loan funds are abundant bankers may encourage loans if the borrower has adequate security to insure payment of the principal even though the loan may be an unsound one from the borrower's standpoint. Some of these difficulties are not insurmountable. Others are inherent in the nature of private banking. The most serious one is the tendency of privately managed credit to expand too much in periods of prosperity, thus emphasizing booms, and to contract too much in bad times, thus emphasizing depressions.

The difficulties in the way of meeting the farmers' needs in the realm of mortgage loans are probably too great to be overcome by the regular commercial banking system, although undoubtedly these lending agencies will continue to make such loans in fair volume. It is evident, however, that a loan which is to run twenty, thirty, or forty years must be made from funds which will be available to the lending agency over a somewhat similar period, or that the lending agency must have an assured outlet for loans which are on this longer-term basis. Insurance companies are, of course, well

suited for making loans of that kind since the amount of drain on their liquid funds is measurable and known for considerable periods ahead. There appears to be no reason why insurance companies cannot make farm mortgage loans on as favorable a basis as the Land Banks can if no substantial subsidies are involved. Actually many of them are meeting the Land Bank competition.

If we turn now to the objections raised to public action in the farm credit field, we find them different in character. Those most commonly mentioned are the concealed costs involved, the possible effect of political pressures of one kind or another, the necessity under the law for uniform rates of interest regardless of the areas served, the possibility of a relatively high overhead, and the fear that the loaning procedures will be used to exert pressure in connection with programs of other types. Since the implications of this brief comment are apparent, I shall not discuss it in detail.

With this brief review of the background we can now turn to the specific issues under consideration. These may appear more clearly if we deal first with the two extremes.

In the strictly short-term field there seems little need for duplicating the private banking structure so generally available throughout the country, provided the banks adapt their procedures to the legitimate needs of the communities, and do not introduce unduly monopolistic practices. These loans can be made by private banks for suitable terms; adequate funds can be made available through general credit channels; and the facilities for rediscount are such that the banks can protect both themselves and the borrowers.

This conclusion can be supported, however, only if commercial banks make effective use of the facilities available to them to maintain a reasonable volume of credit in periods of depression, and do not eliminate competition in the private banking field to an extent that a healthy competitive situation cannot be maintained. Additional legislation, longer experience, and the guarantee of deposits now make it possible for private banks to follow a more constructive policy than they were able to do a decade or two ago.

For these short term loans the facilities of commercial banks are more conveniently located and their methods less cumbersome than for most of the governmental credit agencies now in operation. The objection that interest rates are too rigid and too high may be a legitimate one, but if so, the difficulty can be corrected within the existing framework of private banking institutions and the controls

over them. At the same time the convenience and flexibility of the commercial banking system are competitive advantages that will probably preserve its present dominant position in this field, unless the government goes all out on providing a socialized credit system.<sup>2</sup>

At the other extreme is the mortgage loan. Here it seems evident that the commercial bank has limited possibilities. It may well continue to make loans of abnormal types and in areas where farm loan associations are not available, or under conditions where the uniform interest rates and general regulations of the Federal Land Bank system do not fit the conditions. This is an appropriate field for life insurance companies and should be a profitable one provided their loans are conservative and well supervised, and provided the federal loan system is not heavily subsidized.

How much subsidization should be continued depends upon the ends sought; actually on how large a part it is felt the Land Banks should play in the farm mortgage situation as a whole. The answer will be different if the Land Bank system is expected to serve as a neutral channel for efficient transfer of savings from investor to borrower than if it is intended as an instrument for management of the farm credit and land price situation. Certainly the original conception of the Land Bank system was that it would provide an efficient, neutral channel for transfer of funds and a means of supplying funds on terms better suited to the needs of agriculture. Control of land booms and depressions was not envisaged as a part of its function. The expansion or contraction of bank credit generally was looked upon as a matter to be handled by the Federal Reserve Banks and the general banking system. This view has undergone some modification in recent years.

During the 1920's the notion of stabilizing the economy through credit controls gained wide acceptance. The debacle of 1930 and the subsequent failure of easy credit to bring about revival deflated many of the exaggerated claims about the power of monetary controls. During the middle Thirties, however, there was some revival

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<sup>2</sup> Some loans made by the production credit associations are for very short periods, and are of a type suggested as being well suited for handling by commercial banks. It is evident, of course, that both the farmer and the lending agency may find it convenient to have the full line of production credit needed by a given borrower handled through one credit agency. It is to be expected therefore that production credit associations will continue to handle some short term loans and that commercial banks will make some loans for longer periods than are usually classed as short-term.

of interest in monetary measures. Their significance was greater in foreign affairs than on the domestic front. In the international realm monetary controls became implements of high political policy and were used as weapons of aggression as well as for more legitimate ends. Without an informed and alert public, monetary and other controls can be instruments for evil as well as for good. The greater danger in internal affairs, however, is not from consciously evil designs, but from well-meaning but short-sighted and unintelligent activities of pressure groups.

During the middle Thirties the Land Bank and Commissioner Loan program became a mechanism for large and necessary expansion of credit for agriculture at a time when credit supplied through other channels was being contracted rapidly. The system provides a mechanism for checking disastrous liquidation in such times and has performed a great service in the decade just past. It is less effective as a means of checking undesirable increases in land prices with their accompanying credit expansion. It would seem therefore that the Land Banks can best serve the nation's agriculture in depression periods, if they follow a conservative policy in periods of credit expansion, and in periods of contraction seek to replace credit withdrawn by other agencies which are less directly concerned with the public interest. In boom times pressure should be exerted for liquidation and prepayment, and new loans should be held to conservative levels. Loans of the commissioner type should be provided sparingly if at all at such times, even though earnings of the lending agencies are reduced thereby. This is substantially the policy now being followed.

Certainly it seems essential to the well-being of agriculture that a strong and experienced Federal Land Bank system be maintained. If subsidies are necessary to maintain the system in working order, they should be provided. However, there does not seem to be great need for subsidies in the farm mortgage field at the present time. If they are to be provided, they should be in simple form and clearly identified so the public can see what it is paying for the benefits derived. If the policy followed is that implied by the comments just made it does not seem likely that private agencies will find themselves eliminated from the field nor subjected to a form of competition that is seriously destructive to their interests.

We turn now to the much more controversial field of middle-term or intermediate loans including those of the Banks for Coopera-

tives. Here there is no clear-cut answer. Farmers want an assured source of production loans running longer than 60 or 90 days. Banks have usually met this need in good times. In bad times both banks and borrowers have been under heavy and sometimes destructive pressure.

The production credit associations have introduced certain improvements such as better budgeting, payment of interest for the actual period of use, and more careful limitation of loans to productive purposes. They have not, for the most part, been on a strictly self-supporting basis. It cannot be assumed, however, that there are no subsidies in the commercial banking system. As in the farm credit system very considerable amounts of government credit were put into the banking system in the 1930's, some at a nominal charge as, for example, the loans and preferred stock purchases of the R.F.C. (some \$3,300,000,000 at 3% interest) the capital supplied to the Federal Deposit Insurance Corporation (\$150,000,000) the government guarantees on home mortgage loans and so on. In addition the bank's charter is in a sense an authorization to create credit. Most of this aid was, however, a prop in a period of major financial catastrophe and somewhat comparable to the federal contributions to the Farm Credit Administration agencies during this time. With the exception of capital of the F.D.I.C. it is not expected to be a continuing drain on the treasury. The power of banks to create credit differs from a subsidy in that it does not have to come out of public funds. The two situations are not strictly comparable, and neither group of agencies can lay claim to an entirely independent status. The basic objective in both cases should be to provide a convenient and stable low cost source of credit with as little drain on public funds as possible, and with a minimum of unnecessary duplication. Credit arrangements requiring continuous subsidization should be weighed carefully with respect to the advantages gained as against the outlays required.

Commercial banks have in many cases improved their procedures to meet the competition of the production credit associations but probably would not have done so had they not been forced into it. It seems likely that these banks are now able to provide good service in this field, perhaps with greater convenience to the borrower than can be afforded by the P.C.A.'s. Nevertheless, farmers do not want to be without the alternative channel provided by the P.C.A.'s, though they may not choose to give them enough volume of busi-

ness in ordinary times to maintain them on a self-supporting basis.

A reasonable approach to this problem would seem to be that the P.C.A.'s should be expected to charge a rate of interest that would make them self-supporting (including a reasonable return on investment) if their volume of business were comparable to that of similarly financed and staffed commercial banks. Banks would then be meeting a fair and reasonable competition on the lending side and farmers would be assured of rates and terms appropriate to a reasonably competitive loan situation. If, under these conditions, the P.C.A.'s are unable to get sufficient business to maintain themselves, public aid may well be provided to keep them available and functioning even at some expense to the public provided farmers and the public feel this additional protection against exclusive reliance on the banks is worth the cost. The very fact that the public agencies are designed to aid in stabilization under emergency conditions implies some expectation that they will do a larger volume of business at some times than others. This is not, of course, meant as a suggestion that they should not compete actively at all times nor that they should not seek to make their services more efficient, more convenient, and more attractive to their borrowers. They may well come to occupy a permanent, self-supporting place in the credit structure. In that event there can be little legitimate criticism on the part of the private agencies that they are subjected to unfair competition. On the other hand, if the government sponsored agency were to be heavily subsidized and projected into a field predominantly served by private organizations it might eventually drive them out of that field of activity regardless of which may be the more efficient way of performing the function.

The situation with respect to the Banks for Cooperatives is similar in many respects, but is modified by an announced public policy of encouraging the cooperative method in handling agricultural business. Most of the cooperative loans are suitable for commercial banks, except perhaps the facility loans.

That the Banks for Cooperatives have been able, through their loaning activities as well as their service and educational activities to make substantial improvements in the handling of cooperatives cannot be doubted. Their most distinctive field is in the provision of facility loans and the institution of orderly amortization, better book-keeping and so on. Furthermore, it is a recognized fact that cooperatives dealing through local banks are at times embarrassed



through the fact that private competitors are represented on the boards which pass upon their loans.

In general it would seem that the advantages to cooperatives in having an assured source of loans at a competitive rate based upon the general money market should be sufficient to maintain a healthy business for the Banks for Cooperatives, especially in view of the additional service and educational work available to them through this channel.<sup>3</sup> Many of the smaller cooperatives do not have ready access to low cost commercial bank loans and will continue to find the Banks for Cooperatives their most satisfactory source of credit. For some of the large cooperatives it is doubtful if the Banks for Cooperatives can secure their business in times when funds are very abundant since commercial banks will at such times provide funds at rates hardly above the bare costs of handling. There appears to be no need, however, under those conditions for providing at public expense loan funds or capital merely for the purpose of meeting this competition. Here again the publicly sponsored agency probably should conceive of its function as in part a stabilizer rather than that of a continuous supplier of all of the funds used by the cooperatives. In view of the general approval of cooperative handling of farm products the service and educational features of these banks may well be provided at public expense. This is, in the main, a service not provided by the commercial banks.

If such a criterion is used, it would seem to afford to the commercial banks a reasonable competitive opportunity while leaving available to the cooperative associations a dependable source of loans and the very real advantages of the counsel, education, and encouragement now provided by the Banks for Cooperatives.

To summarize briefly the preceding discussion, the proposals might be stated as follows:

1. Look to the commercial banks to serve as the principal source of strictly short-term credit, under conditions of real competition among themselves.

<sup>3</sup> The abnormal conditions in the money market during recent years have, of course, made it attractive for commercial banks to seek loans based on suitably warehoused commodities at almost any rate of interest, thus introducing a form of competition that possibly cannot be met by the Banks for Cooperatives with their mechanism. This may, however, be a more or less temporary condition.

2. Maintain the Federal Land Bank system on a self-supporting basis in ordinary times, but keep it adequate to act as an effective support in times of depression. If some governmental aid is necessary to accomplish this, supply it, but avoid subsidies designed to reduce the general level of interest rates on farm mortgage loans. In ordinary times the farmer is entitled to an interest rate based on the cost of funds in the general loan market, efficiently channeled to him, but no lower. Artificially low interest rates on farm mortgages tend to be translated into higher land values without long-term advantage either to the farmer or the public,
3. For Production Credit Associations base interest rates upon open market rates plus charges which will support those associations maintaining a volume of business comparable to that of private agencies having similar capitalization and personnel. If the volume of business is unavoidably below this level and some financial aid is necessary to maintain the organization for standby purposes, supply it provided the advantage of this insurance and competition is considered worth the cost.
4. The Banks for Cooperatives may reasonably be expected to operate in the main on a straight competitive basis, paying prevailing rates of interest on their loan funds and making a reasonable return to the government on the capital provided by it. Service and educational activities designed to strengthen and improve the cooperative organizations may well be provided at public expense since the public has expressed itself as desiring to foster the cooperative method as over that of individual enterprise.
5. Special classes of government loans such as feed and seed loans, Farm Security loans, and non-recourse, price-supporting loans, are in the main not competitive with those offered by the private agencies. In these cases the costs must be weighed against the social values resulting from the loans, but the problem is different from the one with which we are concerned in this discussion.

## WAGE STABILIZATION IN AGRICULTURE

WILLIAM T. HAM  
*War Food Administration*

TWO years have gone by since the passage by Congress of the Stabilization Act of 1942, designed to stabilize wages and prices. During that time much has been heard of the impact of this legislation upon industrial laborers and their employers. Its bearing upon farm labor, on the other hand, has received little attention.

The farm wage stabilization program is of interest, not merely as a phase of war-time control of prices and wages, but as a demonstration of the difficulties of including farm wages in any scheme of wage regulation. The large number of small enterprises, the wide variety in working conditions and in methods and amounts of payment, the lack of representative associations of employers and employees able to enter into and maintain contracts, and to furnish representatives to wage boards, create formidable obstacles. It is these, undoubtedly, which have led to the exemption of farm labor from most existing federal legislation relating to wages and working conditions, such as the Fair Labor Standards Act, the National Labor Relations Act and the Social Security Act.

It is worthy of note that in the few states in which farm wage ceilings have been established, the primary motive has been a desire, not to prevent inflation, but to eliminate certain causes of confusion and inefficiency in the farm labor market. From November 1942, when farm wage control was placed under the Secretary of Agriculture, until the following August, only one wage ceiling, covering five counties, was established. Through this experiment farmers became aware that in the wage stabilization machinery they had a means of preventing the "spiralling" of wages, eliminating labor "pirating" and lowering the turnover of labor. Consequently, four additional ceilings—three in California and one in Florida—were instituted. During the second year under the Wage Stabilization Act, the rapid rise of agricultural wage rates continued. There were protests from packing houses that high farm wages made it impossible to keep sufficient labor in the sheds, where wages were prevented from rising by the War Labor Board. In some instances, high farm wages gave rise to requests to OPA for higher prices of farm products. Wage ceilings, however, were still not set primarily as a means of checking inflation, but only at the request

of producers as a means of stabilizing the labor market. Thus additional ceilings were set in California and in Washington, Oregon, Idaho, Arizona and Delaware ceilings were introduced for the first time. In June, 1944, Congress provided that after July 1, 1944, funds appropriated might be used to establish farm wage ceilings only upon the request of a majority of the producers of a commodity in the area concerned.

The removal of farm wages from the jurisdiction of the War Labor Board in November 1942 and the adoption of the provision that farm wages of less than \$2400 a year were to remain free of control were justified on the grounds that

"the general level of salaries and wages for agricultural labor is substandard, that a wide disparity now exists between salaries and wages paid labor in agriculture and salaries and wages paid labor in other essential war industries, and that the retention and recruitment of agricultural labor is of prime necessity in supplying the United Nations with needed foods and fibers, and in order to correct and adjust these gross inequities and to aid in the effective prosecution of the war, . . ."<sup>1</sup>

### *Legislative Basis of the Program*

The legislative basis of the program is to be found in Section 1 of the Stabilization Act of October 1942,<sup>2</sup> under which "the President is authorized and directed, on or before November 1, 1942, to issue a general order stabilizing prices, wages and salaries, affecting the price of living." On October 3, 1942, the President issued Executive Order No. 9250,<sup>3</sup> which established the Office of Economic Stabilization. The Director of this office was instructed "to formulate and develop a comprehensive national economic policy relating to the control of civilian purchasing power, prices, rents, wages, salaries, profits, rationing, subsidies and all related matters—for the purpose of preventing avoidable increases in the cost of living, cooperating in minimizing the unnecessary migration of labor from one business, industry, or region to another, and facilitating the prosecution of the war."

In accordance with this order, the Economic Stabilization

<sup>1</sup> Section 4001.5b, Regulations of the Economic Stabilization Director, amendments of November 30, 1942.

<sup>2</sup> 56 Stat. 765 (1942), 50 U.S.C. App. §961 et. seq. (Supp. III) as amended by the Public Debt Act of 1943 (57 Stat. 63 (1943)), 50 U.S.C. App. §964 (Supp. III) and the Stabilization Extension Act of 1944, Pub. Law No. 383 78th Cong., 2d Sess. (June 30, 1944).

<sup>3</sup> 7 Fed. Reg. 7871 (1942).

Director issued regulations on October 27, 1942, with respect to the stabilization of wages and salaries and the administration of the program by the National War Labor Board and the Commissioner of Internal Revenue.<sup>4</sup> These regulations contained no specific provisions with respect to agricultural as distinguished from industrial labor.

On November 30, 1942, the regulations of the Economic Stabilization Director were amended to provide that "the Secretary of Agriculture shall have the authority to determine whether any salary or wage payments to agricultural labor are made in contravention of the Act or any rulings, orders or regulations promulgated thereunder."<sup>5</sup> These powers, functions and duties of the Secretary of Agriculture were transferred to the War Food Administrator by Executive Order No. 9322 of March 26, 1943.<sup>6</sup>

The regulations governing agricultural wages differ materially from those which relate to industrial wages. In the latter instance, wages were "frozen" at the point attained on September 15, 1942. Thereafter no wage increase might be made without the specific approval of the War Labor Board, except in the case of rates below a certain minimum, which were held to be substandard. The program of the War Labor Board, therefore, involves decisions whether changes from a given position are justifiable in terms of such standards as the Little Steel Formula, or are necessary in order to correct obsolete or chaotic wage structures, or for other reasons. In the case of agricultural wage rates, the application of any such general "freeze order" encounters difficulties. These arise from the scattered and highly individual nature of farm employment, the informal and unstandardized character of farm labor contracts, wage rates and jobs, and the fact that on any given date many seasonal tasks are not under way and would therefore not be included in a "freeze order" of that date. At any time that might be chosen, the prevailing farm wage structure would be so nebulous and diversified as to offer a very unsatisfactory basis for the administration of a wage stabilization program like that of the War Labor Board in industry. A general "freeze" would perpetuate different rates for the same work in the same area and, owing to the number and vari-

<sup>4</sup> 7 Fed. Reg. 8748, 9206, 10024 (1942), 8 Fed. Reg. 11960, 12139, 12238, 16702 (1943), 9 Fed. Reg. 6035 (1944).

<sup>5</sup> Section 4001.5a, 7 Fed. Reg. 10024 (1942).

<sup>6</sup> 8 Fed. Reg. 3807 (1943).

ety of farm enterprises, would probably be impossible to enforce. No general minimum, below which wage rates would be free to move, would be practicable, since any such minimum could not include the numerous piece rate methods of payment. Moreover, any minimum applicable to California might be regarded as inflationary in South Carolina; thus there would have to be regional variations in the minima and in corresponding piece rates.

Another difference between wage control in agriculture and in industry is that while, under the regulations of the Director of Economic Stabilization, any industrial employer who does not have more than eight employees is exempted,<sup>7</sup> to apply this rule to agriculture would be to exempt most farm employers. Accordingly, the farm wage and salary stabilization program applies to employers of a single employee.<sup>8</sup> A farm wage stabilization program apparently requires the determination by some authority of base rates for specific operations. These rates must be determined in the light of comparable farm rates in the area for other work of similar grade, comparable nonagricultural rates, the amount of perquisites involved, the farm labor supply situation, past levels and trends, growers' ability to pay and other such factors. The base rate must facilitate the obtaining of sufficient labor and yet not be such as to be inflationary.

This task is one of some complexity. Many different rates and methods of wage payment are to be found for the same jobs. Hardly any two jobs, though called by the same name, are precisely the same. Harvest containers vary in size and weight. Compensation may be by the piece, by the hour, by the day, or by a combination of these. Bonus payments and the provision of varying amounts and kinds of perquisites complicate the situation.

### *Definition of Agricultural Labor*

As usual in any program in which agricultural labor is to be either excluded or included, the definition of this group has led to debate. The regulations of the Economic Stabilization Director defined the term as "persons working on farms and engaged in producing agricultural commodities whose salary or wage payments are not in excess of \$2400 per annum."<sup>9</sup> It became clear almost im-

<sup>7</sup> Section 4001.16, 8 Fed. Reg. 11963 (1943).

<sup>8</sup> Section 1100.6 of the WFA Regulations Relative to Salaries and Wages of Agricultural Labor, October 3, 1944, 9 Fed. Reg. 12117.

<sup>9</sup> Section 4001.1(1), 7 Fed. Reg. 10024 (1942).

mediately that this definition was too narrow, especially by contrast with the much broader definition of agricultural labor contained in other existing legislation. For example, the phrase "working on farms" raised the question why a person in charge of a chicken hatchery on a farm should be under the jurisdiction of the War Food Administrator, while if he were running a similar establishment not on a farm he would be under the War Labor Board. Moreover, the reference to "salary or wage payments in excess of \$2400 per annum" was ambiguous. Were total annual earnings referred to or a rate of payment per year? Many seasonal agricultural workers whose annual earnings do not amount to \$2400 a year are paid for short periods at rates which, if extended to the entire year, would bring them above the \$2400 level. Why should such seasonal workers be subject to the War Labor Board rather than the Secretary of Agriculture?

On December 9, 1943, the Economic Stabilization Director amended the wage and salary regulations to provide that<sup>10</sup> "the term agricultural labor shall mean persons who are employed in farming in any of its branches, including among other things the cultivation and tillage of the soil, dairying, the production, cultivation, growing and harvesting of agricultural or horticultural commodities and the raising of livestock, bees or poultry: Provided, however, that the term 'agricultural labor' shall not include any person whose salary payments, exclusive of bonuses and additional compensation and without regard to the contemplated adjustment, are at a rate, computed on an annual basis, which exceeds \$5,000.00 per annum."

Since this revision of the definition, difficulties have most frequently arisen regarding the classification of packing house workers and those engaged in hauling agricultural commodities, activities which, as nonagricultural, are under the jurisdiction of the War Labor Board. Many farms have packing houses, of varying size, the workers in which may be engaged part time at picking or other strictly agricultural activities. Hauling is frequently done by the farmer's own employees, often working in crews so that the actual driving is only a part-time occupation and payment for the work is on a crew basis.

Determination of jurisdiction in such cases is in the hands of an interagency committee. In case of disagreement, decision is given

<sup>10</sup> Section 4001.1(1), 8 Fed. Reg. 16702 (1943).

by the Director of Economic Stabilization. It is now the rule that an employee engaged in packing agricultural commodities may not be classified as agricultural unless his packing activities are clearly incidental to his agricultural employment, are carried on in relation to commodities produced by his agricultural employer, and are performed in a packing establishment employing not more than eight persons. The hauling of agricultural commodities to a place off the farm has been classified as industrial labor. Neither of these decisions has proven satisfactory to agricultural producers since thereby many operations locally regarded as farm work are classified as nonagricultural. As a consequence, in some instances, wage control is altogether out of the question, due to the fact that the employer has fewer than nine employees, and is thus exempt from War Labor Board regulation. In other cases in which the War Labor Board *can* act, farmers find it exasperating that, in dealing with one group of employees, such as potato harvesters, they should have to negotiate with two federal agencies.

The wage stabilization program has two phases, one of a general character, relating to agricultural labor in all parts of the United States (excluding territories and possessions), and the other applying only to such specific crop operations, employers and laborers as the War Food Administrator may designate. Both these phases are covered by the so-called "General Regulations,"<sup>11</sup> first issued by the War Food Administrator on January 17, 1944, and subsequently amended. The "Specific Wage Ceiling Regulations"<sup>12</sup> of January 20, 1944, relate solely to the second phase.

### *The General Regulations*

Under the General Regulations, farm wages may not be increased to a rate of more than \$200 a month without the approval of the War Food Administrator. Up to that point, they may be increased at will. In the case of discontinuous seasonal work, if an employer paid at a rate higher than \$200 a month during the year prior to December 9, 1943, he may continue to pay the same rate for the same work under similar conditions.

Approval of increases to rates in excess of \$200 per month is granted on grounds similar to those laid down by the War Labor

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<sup>11</sup> Regulations Relative to Salaries and Wages of Agricultural Labor, 9 Fed. Reg. 655 (1944).

<sup>12</sup> 9 Fed. Reg. 831 (1944).



Board,—viz. in cases of promotion or reclassification, merit increases, operation of an established plan, increased productivity and so forth.<sup>13</sup> Up to October 1944, incomplete records showed 563 applications for approval of farm wage or salary increases, involving some 930 job classifications and at least 23,000 workers.<sup>14</sup> More than half the applications came from California, sixty-three from Washington, and 16 from Illinois, next highest on the list. In many states, obviously, farmers were unaware of, or indifferent to, the regulations. About two-thirds of the applications had to do with supervisory or managerial jobs, about ten percent with clerical positions, a slightly greater number with automotive and mechanical operations and maintenance jobs and the rest with field labor.

The chief difficulty in administering the General Regulations has been the problem of determining the limit below which wages might be raised at will. This was originally stated as \$2400 a year. There is ground for supposing that this figure was regarded, not as a rate of pay, but as total earnings during a period of 12 months. The regulations of the Director of Economic Stabilization recognized that the wages of agricultural labor were substandard. Accordingly, any farm worker whose annual earnings were below \$2400 was to be left free to better himself. As an additional guarantee of flexibility, in the first regulations issued by the War Food Administrator, it was provided that "in individual cases salary or wage payments may be more than \$200 a month, or the equivalent rate, for not exceeding sixty days in any one year, if the aggregate wage or salary payments to the laborer from all sources of employment as an agricultural laborer are not more than \$2400 for that year."<sup>15</sup> This provision proved unworkable and was later discarded.

Like the 60-day period of grace, the concept of total annual earnings also proved to be a stumbling block. Often it was out of the question for an employer to determine the total annual earnings of an employee. This was particularly true in the case of seasonal workers, who were engaged by a succession of employers for short periods at different jobs. Yet it was precisely the wages of

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<sup>13</sup> Section 4001.10 of the Regulations on Wages and Salaries of the Economic Stabilization Director.

<sup>14</sup> Frequently applications are inexact as to the number of workers affected thereby. These figures do not include individual adjustments under the wage ceilings.

<sup>15</sup> WFA Regulations relative to Salaries and Wages of Agricultural Labor, January 17, 1944, Paragraph 1100.9.

such workers that were most likely to require control. Moreover, even if it were possible for an employer to determine total earnings, the result would have been chaos, for by this standard two employees might receive different wages, for doing the same work, provided that one had earned \$2400 during the specified twelve-month period while the other had not.

Enforcement, it appeared, depended upon the \$2400 being regarded, not as total earnings, but as a rate of pay which, in making increases, was not to be exceeded without approval. But this raised a new set of difficulties. What did a rate of \$2400 a year mean in terms of other periods of employment and methods of payment? Were workers to be limited to \$200 a month, despite the fact that many seasonal employees, unemployed for a good part of the year, worked for short periods at rates in excess of \$200 per month? What about hourly rates and the length of the working day? A working period of 9 hours per day and 24 days per month would permit an hourly rate of 92 cents but if a man worked 12 hours per day he could earn only 70 cents per hour and still stay below the \$200 standard. And what about piece rates? How were workers capable of varying degrees of performance to be paid the same piece rate and yet stay within the prescribed monthly, daily, or hourly rate? If piece rates were to be equated with hourly rates, how was the incentive element to be maintained?

These questions, needless to say, have not all been answered. In California and Washington, the rate of 85 cents per hour, calculated on the basis of a nine-hour day and twenty-six day month, has been set as the equivalent of \$200 a month, the point above which increases may not be made without approval. As regards piece rates, the aim has been to stabilize them in terms of average earnings under normal conditions on the part of an average worker, without limiting total earnings and destroying the incentive feature. It seems clear if piece rates are to be controlled, reliance must be placed upon the specific wage ceiling program rather than upon the General Regulations. During the first two years under the Stabilization Act, the control of seasonal farm rates has been very defective.

### *The Wage Ceiling Program*

Under the second phase of the wage stabilization program, the War Food Administrator may establish maximum rates in specified

areas for specific crop operations such as milking, picking apples, or baling hay. More than this maximum, regardless of existing contracts, an employer may not pay without securing approval. By direction of Congress, since July 1, 1944, the Administrator may establish such a ceiling only upon the request of a majority of the producers of the commodity in question in the area concerned. Authority to hold hearings, to make recommendations as to proposed ceilings, and to administer the program in an area after a ceiling order has been issued by the Administrator, is delegated to State WFA Wage Boards. These boards may also make adjustments permitting individual producers to pay higher rates than those permitted under the ceiling order. Investigation of alleged violations of the orders is also a responsibility of the State WFA Wage Board; prosecution of such cases may either be handled by the board itself or by the Office of the Solicitor. The boards in California, Washington, Oregon and Idaho have authority to deal with applications for salary or wage increases under the General Regulations.

The State WFA Wage Boards are generally composed of five members, with an alternate for each; at least a majority of the members must be federal employees. Members of the board, with alternates, are appointed by the Director of the WFA Office of Labor upon the suggestion of the State Extension Director. Members are drawn from such agencies as the Agricultural Adjustment Administration, the Forest Service, the Soil Conservation Service, the Extension Service, the State Department of Agriculture, the State College, etc. Tripartite boards, like those of the War Labor Board, composed of representatives of employers, laborers and the public, have not been thought practicable in agriculture.

Specific wage ceiling orders are issued by the War Food Administrator upon recommendation of a State WFA Wage Board, after certification by the board that a majority of the producers of the commodity concerned, in the area affected, desire the War Food Administrator to take such action.<sup>16</sup> Prior to making its recommendations, a board is required to hold a public hearing with full opportunity for all interested persons to testify. Every effort is made to secure the appearance of workers as well as of their employers. A transcript of the testimony is sent to Washington, along with the recommendations of the board as to the crop operations in connec-

<sup>16</sup> Section 1100.8, 9 Fed. Reg. 12119 (1944).

tion with which wages are to be stabilized, the counties concerned, the rates to be set as maxima, etc. The War Food Administrator is not bound by the recommendations of the board, but as a matter of practice, such recommendations have been closely followed.

The first specific wage ceiling was established in connection with the cutting of asparagus in central California in April 1943. Wages of Filipino cutters had risen to levels that permitted average earnings of from \$18.00 to \$20.00 per day.<sup>17</sup> Pirating of labor by one producer from another was common. Time spent by laborers in running down rumors of high wage rates was a frequent source of complaint. With some hesitation, the California Wage Board recommended the imposition of maximum wages which would constitute a "roll back" of the relatively high rates being paid. The order embodying these recommendations was accepted by the workers as soon as they became convinced that it was of official character and not merely some chicanery on the part of the growers. As a result, many asparagus producers who would have been unable to harvest their crops at the high rates prevalent early in the season were able to continue. Labor pirating ceased. The 1943 harvest season, which had begun with numerous labor disputes, ended quietly.<sup>18</sup>

The beneficial effects of the asparagus wage program were noted by growers of other commodities. Producers of tomatoes, raisin grapes, and cotton in California requested similar action. Wage ceilings were established for the harvesting of these crops over a wide area. An order setting maximum wages for orange, grapefruit and tangerine pickers in Florida appeared in November 1943.

Since April 1943, there have been forty-three specific wage ceiling orders, of which 24 have appeared since July 1, 1944, when it became necessary for a majority of producers to request the intervention of the Administrator. In November 1944, thirty-seven orders were in effect. Of these seventeen apply to California, four to Oregon, eight to Washington, five to Idaho, and one each to Arizona, Florida and Delaware. State WFA Wage Boards have also been appointed in Texas, New Jersey, Colorado, Maryland, Michi-

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<sup>17</sup> Metzler, William H., *Analysis of the Operation of the Wage Ceiling in the Asparagus Industry, Sacramento-San Joaquin Delta, 1943*. (Bureau of Agricultural Economics, Berkeley California, October 1943, mimeographed) p. 15.

<sup>18</sup> Metzler, William H., *Analysis of the Operation of the Wage Ceiling Order for Harvesting Cannery Tomatoes, California, 1943* (Bureau of Agricultural Economics, Berkeley, California, May 1944; mimeographed) p. 5.

gan, and Illinois but no wage ceilings have been established in these states. Crop operations in connection with which wages have been stabilized include the picking of apples, cherries, apricots, lemons, pears, peaches, citrus fruit, hops, blackberries, canning tomatoes, raisin grapes, peas, potatoes and cotton; the dry pack harvesting of lettuce; the topping and loading of sugarbeets; the cutting and packing of asparagus; the mowing, raking and baling of alfalfa hay; the cutting of peaches, and the thinning and spraying of apples. In the Los Angeles milkshed, a ceiling regulates increases in the wages of milkmen, machine operators and milk-house can-men in dry-lot dairies.

### *Difficulties of a Wage Ceiling Program*

The difficulties that must be overcome in devising an effective wage ceiling program are both technical and administrative. Within the framework set by competitive industrial wage rates, the State WFA Wage Board, in setting the maximum rates for an agricultural occupation, must take into account (a) competitive operations on other crops, either in the area or in regions near enough to compete for labor, and (b) interrelated operations in the same crop. The aim must be to equalize earnings in such a way as not to place growers of any essential crop at a disadvantage in securing labor. Nor must any necessary operation be rendered unattractive to labor.

In California in 1943, the ceiling rate for picking raisin grapes, which speedily became the prevailing rate, permitted such high earnings that there was a shortage of men to turn, roll and stack the raisin trays in the vineyards. Moreover, the maxima set for picking Thompson Seedless grapes were alleged to be imperfectly adjusted to those for picking the Muscat variety, with the result that in some vineyards, the latter remained on the vines.<sup>19</sup> The labor supply was adequate for harvesting both sorts, but workers preferred to remain idle rather than work at the rates specified for Muscats. In prospect it was feared that the lack of control over wages and prices in the wine and table grape industries would endanger the wage program in raisin grapes and tomatoes. The favorable labor situation, however, made wage competition un-

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<sup>19</sup> Metzler, William H., Analysis of the Operation of the Wage Ceiling on Picking Sundried Raisin Grapes; California, 1943, (Bureau of Agricultural Economics, Berkeley, California, March 1944, mimeographed) p. 23.

necessary and thus eliminated what otherwise might have been an insuperable obstacle. Certainly wage control without price regulation is a project not lightly to be undertaken.

In writing a ceiling order, a board is torn between the desire to achieve a simple straightforward statement, which not even the most suspicious worker will be able justifiably to regard as a cloak for the manipulations of producers, and the necessity of taking into account the extreme variety met with in agricultural operations, even on "factory farms." Rates frequently vary with crop varieties, with variations in yield and with different pickings, not to speak of the condition of the field, the nature of the housing or other facilities offered by the grower in addition to wages, and the remoteness of the farm from sources of labor supply. In the California peach area, for example, there are several varieties which mature at different times and have varying yields. Orchards are of varying age, with trees of different size. Moreover, the fruit may go to the cannery, the dryer or the fresh market, and thus may bring varying prices, affecting the ability of a producer to meet conditions under a wage ceiling. Even in the Los Angeles "dry-lot" dairy area, where operations are probably more factory-like than anywhere else in the country, a major difficulty of the wage stabilization program has been the lack of standardization of the tasks performed by the milkers and canhouse men, hardly any two of whom receive wages for precisely the same work.

Inflexibility of the wage structure, such as the setting of a single flat rate without regard to variations in the conditions of work, even if it does not wreck the program, favors the grower with large acreage and most favorable conditions over the small or marginal producer. The only alternative to a flexible wage schedule is an effective scheme for granting liberal adjustments in the base rate, as a feature of the administration of the wage order.

Out of this necessity of permitting the payment of wage rates higher than those specified as maxima arise some of the chief difficulties of a wage ceiling program. No matter how detailed the schedules relating wage rates to crop variety, yields, number of pickings, and other conditions of work, a ceiling order cannot fit all circumstances. Accordingly, the State WFA Wage Boards have authority to make adjustments in cases of hardship. Since such cases can be decided only on a basis of fact not readily to be ascertained at state headquarters, boards rely upon local individuals or

groups to appraise the validity of applications for special consideration. The aim is to secure equalization of earnings so that a grower whose yield has been lowered by bad weather or the condition of the soil, whose trees are exceptionally large or old, whose location is remote from sources of labor supply, or whose acreage is so small and equipment so inferior that he is at a disadvantage in securing labor, may be on a basis of equality with other growers in caring for his crop. At the same time, the laborer is not forced to choose between idleness or employment under conditions which make normal earnings impossible.

Administration of the "adjustment" feature, obviously, can make or break a wage program. Carried out in a responsible manner, it can compensate for the omission of many items that should have been covered in the wage order itself. Irresponsibly administered, the adjustment feature can destroy any semblance of control. Experience of the past two years has demonstrated, however, that the chief danger is not mere irresponsibility. Growers of repute have shown themselves highly cooperative and conscientious in carrying out the tasks of the adjustment committees. The chief difficulty relates, rather, to a mistaken notion that the purpose of wage stabilization is merely to keep wages down, to "hold the line," to prevent anybody, for any reason, from paying more than the ceiling rate. Such practice, of course, is unfair both to the grower with exceptional conditions, and to the laborer who works for him. In some cases, it is adopted merely as a means of resisting any rise in wage rates, regardless of conditions; in others it is due to a desire to achieve effective enforcement. The first of these grounds, is of course, in conflict with the principles of wage stabilization; the second is based upon a misconception. As a matter of fact, a rigid adjustment policy is likely to lead to widespread evasion of the terms of the wage order, by such means as paying workers for more fruit than was actually picked, giving them gasoline or paying them for unused transportation facilities. A liberal policy of granting adjustments, on the other hand, when coupled with zeal in ascertaining the facts on which applications for adjustments are based is much more likely to lead to effective enforcement.

The inclusion of labor representatives as members of the local adjustment committee, although generally recognized as desirable, has not been common practice. A committee like that in the Marysville, California, peach area, on which the four labor members,

equal in number to the grower representatives, were selected by a mass meeting of the pickers, is exceptional. Growers frequently object to such procedure as likely to lead to the organizing of labor unions. Selection of labor representatives by agents of the State WFA Wage Board, or by the grower members of the adjustment group, is open to objection on other grounds. Accordingly, most adjustment committees are without labor representatives, or at best, have only the assistance of a labor contractor, who is assumed, often, no doubt, erroneously, to have the point of view of the workers. This situation is due, not primarily to grower opposition, but to the difficulty of finding competent worker representatives, to the reluctance of workers to serve on such committees because of a feeling of being at a disadvantage in dealing with growers man to man, to unwillingness of workers to lose working time in order to serve as committeemen and to mere apathy. Similar difficulties have been encountered in securing the attendance of labor representatives at public hearings.

Organized opposition on the part of laborers to the maintenance of ceiling rates, once established, has occurred in only one instance. In this case, which took place at Orlando, Florida, in November 1943, the resistance offered by a local union of citrus pickers and packing house workers was of short duration. In California, a CIO Council condemned the WFA Wage Boards as "the illegitimate offspring of an unholy alliance between the corporate farm interests and a susceptible Congress."<sup>20</sup> This attitude, however, has not been that of the farm workers themselves. Local Union No. 737 (A.F. of L.) of Hay Haulers, Dairy Employees and Helpers, which claims to have eighty-one unionized dairies under contract in the Los Angeles metropolitan milkshed, has cooperated in the wage ceiling program for dairy workers in that area.

Enforcement under the wage ceiling programs involves investigation of alleged violations of the ceiling order by the county committee or by an agent of the State WFA Wage Board. If evidence indicates that a violation has occurred, the state board is notified. The grower in question is then asked either to appear before the state board or before a representative of the Office of the Solicitor. If the violation is substantiated, recommendations are made to the Director of Labor. The Stabilization Act of 1942 authorizes a criminal penalty, in the form of a fine of not more than \$1000 or im-

<sup>20</sup> Letter to California WFA Wage Board, June 30, 1944.



prisonment for not more than one year, and an administrative sanction, the threat of which appears to have been very effective. This sanction provides that any wage or salary payment made in contravention of the regulations shall be disregarded by governmental agencies in determining the costs or expenses of any employer for the purposes of calculating income tax deductions or in connection with any contract made by or on behalf of the United States.<sup>21</sup> Up to November 1944 only one case, that of a violation of the Florida citrus order, had been carried to the point of imposing penalties. To secure compliance with the wage ceiling regulations, emphasis has been placed upon the cooperation of grower associations and upon educational work.

Since July 1, 1944, the necessity of securing the approval of growers before instituting a wage ceiling has materially influenced the nature and scope of the program. In states in which wage ceilings were already familiar, their extension has been impeded because of inability to impose wage controls upon growers of competing crops. Flower producers, in some areas, for example, by offering the high wages which the high prices of their luxury products permit, may draw from the fields the workers necessary for the harvesting of essential crops. Without their consent, however, no wage ceiling can be imposed upon the flower producers. A similar situation is to be found in the case of the wine-grape growers in California, who can hardly be expected to ask for a wage ceiling which would tie their hands in competing for labor with the producers of other crops. In this state, too, the necessity of securing majority approval has increased the difficulties of controlling wage rates, for early season operations, which are of importance, not only in themselves, but because they set the level for the harvest rates later on. Pruning, for example, involves so many producers of so many different crops that the purely mechanical task of ascertaining grower opinion, as well as the cost of such an extensive canvass, appears prohibitive.

In states unfamiliar with wage ceiling procedure, the necessity of securing approval has impeded the educational process, since no object lesson, even of the most modest proportions, can be undertaken except upon the request of 51 percent of all growers, large and small, in the area under consideration. Even more important, however, is the fact that under present arrangements, it is difficult to

<sup>21</sup> Section 4001.6, #0 Fed. Reg. 6036 (1944).

prevent high wages from leading to demands for high prices, with the inevitable inflationary aftermath. Although wage ceilings would undoubtedly be effective in checking rising labor costs, farmers are unlikely to destroy voluntarily their best argument for price increases.

### *Significance of the Program*

In assessing the significance of the farm wage stabilization program, it is clear that the measures discussed in this paper have thus far had little effect in stabilizing agricultural wages. On October 1, 1944, the index of farm wages in the United States was 95 percent higher than on the same date in 1941, and 17 percent higher than on October 1, 1943. The margin allowed for increases under the regulations of the Economic Stabilization Director, viz. up to \$2400 per year, is so wide as compared with the average annual earnings of farm workers during the pre-war period, that by this criterion it is unlikely that farm wages as a whole have yet risen from their "substandard" status. In the case of those harvest wages which have clearly passed this point, if ever they were below it, we have seen the difficulty of securing control either through the "General Regulations," with the necessity of applying an unsuitable standard of \$2400 a year to highly variable piece and time rates, or through wage ceiling programs, which must have the approval of a majority of producers. If farm wages are to be stabilized at any level, this requirement will have to be removed; there will have to be a vastly expanded educational program; and the influence of unstabilized competitive rates not now under the control of the Administrator—such as those for hauling—will have to be neutralized.

On the other hand, it is clear that, limited as the stabilizing effects, over the nation as a whole, of the wage stabilization program have been, the advantages to producers in the limited areas where the wage ceiling procedure has been adopted, have been considerable. In these areas, undoubtedly, many of these advantages are to be attributed in part to the effects upon the labor supply of the foreign labor program, the farm placement activities of the Extension Service, and the use in agriculture of prisoners of war. Wage stabilization, however, brought about a material saving to producers on the wage bill, through prevention of wage spiralling and wage competition. It stabilized the working force on farms.

Pirating was eliminated. Output per worker was increased. Larger amounts of food and fiber were harvested than would otherwise have been possible with a reduced labor supply. At the same time, in these areas, farm laborers were not placed at a disadvantage. In most cases, wage rates were so high before wage ceilings were established, that even under the ceilings, earnings were exceptional.

It is to be hoped that the system of wage boards and of local advisory committees which has been developed in the wage ceiling program may leave behind it some disposition on the part of growers and workers, on the Pacific Coast and elsewhere, to work out methods of improving the unsatisfactory labor relations of the past. If this should prove to be the case, the farm wage stabilization program will have a significance far greater than that represented by its contribution to wartime control of wages and prices.

## REGIONAL RESEARCH IN AGRICULTURAL MARKETING\*

KNUTE BJORKA  
*Bureau of Agricultural Economics*

A COOPERATIVE approach to research in marketing and in some other agricultural fields has been greatly expanded in recent years. This involves joint or coordinated studies among agricultural experiment stations located in the same region, either with or without participation of the United States Department of Agriculture, or other research agencies.

This article will describe how some of the regional studies are organized and how the work is carried on. Research in the marketing of farm products will be emphasized, but brief reference will also be made to regional research in land tenure and in farm structures. Attention will also be called to some of the advantages of regional research, and to some of the problems that are likely to arise when conducting research on this basis.

In introducing this discussion, it seems worth while to review a few of the highlights in the development of agricultural research in the United States during the last half-century, particularly those steps which have brought about a fuller appreciation of cooperative effort in the solution of problems of regional or national significance.

The Act of Congress of March 2, 1887 (Hatch Act) providing for the establishment of an agricultural experiment station as a department of the land grant college in each State and territory contains the following significant statement: "That it shall be the object and duty of said experiment stations to conduct—researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States and Territories."

With this charter to guide them it was logical that each State should develop a research program around the most pressing problems confronting the agriculture within its boundaries. It was inevitable, however, that problems would arise which cut across State lines and which could best be met by a unified attack by a number of stations with a common interest in their solution.

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For example, as early as 1898 at the annual meeting of the Association of American Agricultural Colleges and experiment Stations, a committee was established to carry on the cooperative work of testing the several varieties of peaches in the various sections of the United States. Among other provisions governing this project, each station was to pay for its own trees. The results were to be written up by the committee, approved by the association, and published by the Department. A report of this committee a year later showed that 13 State stations representing all sections of the country had entered into this cooperative undertaking. Thus we find an early example of a number of States and the Federal Department joining to accomplish an objective that could not have been done effectively by any single agency.

Another cooperative undertaking that involves close Federal-State cooperation is the work in cereal research. This work started near the turn of the century, extended to all important cereals in all parts of the country, and has continued to the present with ever-increasing effectiveness. It would be hard to overestimate the value of this work which has continued without interruption over a long period and under which many of the best features of Federal-State and interstate relationships have been developed:

The history of cooperative research in the United States Department of Agriculture State Experiment Station system is closely allied with the activities of the Committee on Projects and Correlation of Research. This committee was authorized and appointed at the 27th Annual Convention (1913) of the Association of Land Grant Colleges and Universities. It consisted of three representatives from the State stations and three from the Department of Agriculture, each serving 3-year terms. Many of the recommendations of this committee over the years,<sup>1</sup> as translated into action have become milestones of progress in agricultural research.

Research in marketing made a rapid growth following World War I. Recognition of the need for intensifying this phase of agricultural research was reflected in the provisions of the Purnell Bill which was first introduced in Congress in 1921 and finally enacted on February 25, 1925. This act, which authorized the more complete endowment of agricultural experiment stations, specifi-

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<sup>1</sup> Twenty-four-year record of the Committee on Projects and Correlations of Research-Proceedings of the 51st Annual Convention of the Association of Land Grant Colleges and Universities, pp. 275-278.

cally provided among other things for research on the distribution and marketing of agricultural products.

The passage of this bill provided a powerful stimulus for research in the field of agricultural economics and also for closer cooperative effort between the Federal Department of Agriculture and the State experiment stations. Within two months after the passage of the bill, administrative officers and investigators of the Department and the State experiment stations met in St. Louis, Missouri, to plan for the effective use of the Purnell funds and for the promotion and development of cooperative work between the State stations and the Department.

The St. Louis Conference selected six national projects as follows:

1. Distribution and marketing of farm products.
2. The problem of surpluses of farm products.
3. Vitamin content of food in relation to human nutrition.
4. Rural home-management studies.
5. Rural social organizations and agencies essential to a permanent and effective agriculture.
6. Factors influencing the production and quality of meats.

The conferences authorized the Executive Committee to appoint special subject matter committees to formulate project plans to be submitted to the several States with a view to their adoption in a Nation-wide program of cooperative research.

The results of this conference marked the beginning of a new era in Federal-State relations in agricultural research. Now, well over one thousand separate research undertakings are covered by memoranda of understanding between various bureaus of the Department and the several State experiment stations each year, providing for coordinated attack on many different problems.

The passage of the Bankhead-Jones Act in 1935 introduced a new phase in cooperative research effort. Title I of this Act, in providing for further research by the Department and the State stations, specified that approximately one-fifth of the total annual appropriation should be used for the establishment and maintenance of research laboratories and facilities in the major agricultural regions, and for the prosecution of research at such laboratories. This provision fulfilled the growing recognition among research administrators that a part of the public funds for agricultural research should be set aside for cooperative work.

The nine regional laboratories that have been established to date include at least two in each of the four major regions of the United States. These laboratories have developed new patterns in cooperative effort. The director of the laboratory serves as the administrative officer in carrying out the research program formulated jointly by representatives of the Department and the State stations of the region.

The regional approach to research by experiment stations, first undertaken by the New England Research Council, has been especially pronounced during the last 5 years. For example, in 1939 the directors in the North Central States, at a meeting of their regional association, approved the formation of a regional committee for the study of livestock marketing and another regional committee for the study of the marketing of poultry and eggs. Two years later, committees for the regional study of land tenure were formally organized in both the North Central States and in the Southwestern region. Steps to organize regional studies of farm structures were taken by the North Central Directors Association in the spring of 1944. At the annual meeting of the American Society of Animal Production in the fall of 1944, considerable time was devoted to discussion of regional research in animal production.

### *New England Research Council*

The New England Research Council on Marketing and Food Supply has had considerable experience in regional research. It was formed in April 1922 for the purpose of stimulating and coordinating studies of economic problems connected with the supply of food and other agricultural products of New England.<sup>2</sup> The constitution of the council provides that membership be composed of representatives of institutions and agencies actively engaged in prosecuting such economic studies. Each institution or agency selects its own representatives on the council, but in any formal vote each institution has but one vote. The Department of Agriculture, State Departments of Agriculture, colleges, universities, and other public or semi-public institutions engaged in research are eligible for membership in the council provided they actively participate in an approved research project. The council does not confine its activities to research, however, but gives attention also to putting

<sup>2</sup> Corbett, R. B., *The New England Research Council in Marketing and Food Supply*, 1937. Processed.

the findings of research into effect, and to formulating agricultural policy.

The chairman of the council is chosen from its own members. An executive secretary, employed jointly by the Bureau of Agricultural Economics and the council, keeps records of the different projects undertaken and is custodian of such materials and records as are gathered. He also engages actively in research in cooperation with one or more of the experiment stations in the region. The council has a steering committee of six members, one from each State. This Committee works closely with the executive secretary. Other committees for directing research on special studies are appointed. The council is advisory only and does not attempt to control the activities of its members. Two regular meetings of the council are held each year, and special meetings are called as seems advisable.

Much of the accomplishment of the New England Research Council has been through the use of committees composed of representatives from the various States interested in particular commodities or problems. Such committees have outlined the economic research to be undertaken for practically all of the chief commodities in New England. Milk is the most important agricultural product; therefore, it has received more attention than any other. A number of studies have been completed, the reports of which have been issued by the stations at which the major work was carried on. Each report is numbered in the regular bulletin series of that station and carries a statement on the cover page to the effect that it is a contribution to the regional program of research sponsored by the New England Research Council of Marketing and Food Supply.

The New England Research Council has taken the initiative for improving many of the service functions of official agencies in the region. In its early period it sponsored outlook work in New England, and took part in improving the agricultural census.

The council has coordinated the collection of statistics in order to improve their comparability. Data for use in studying milk marketing in the region are now collected on a uniform basis in all of the States. Considerable work has been done to obtain uniformity in the data relating to eggs. This has assisted research staffs in studying egg quality and prices. Other work of this nature has been sponsored by the council. The results have not only helped to improve the quality of the current information but have also served



as a basis for developing more reliable statistics for use in research studies.

*Corn Belt Livestock Marketing Research Committee*

The possibility of a group of agricultural experiment stations in the Corn Belt region conducting research in livestock marketing jointly or in some coordinate way was suggested several times during the period beginning about 1920. It was at the spring meeting of the North Central Experiment Station directors in 1939 that the regional research program in the marketing of livestock and livestock products was decided upon. The directors authorized the appointment of one from each State to constitute a committee whose function would be the consideration of an integrated program of research pertaining to the marketing of livestock. The Directors requested: (1) that the Committee survey the field of marketing of livestock and livestock products to determine projects on which there should be cooperative, interstate, or regional research; and (2) that the Committee prepare plans for the organization of any cooperative projects which would be thought likely to lead to results of value. Such plans were to be submitted by the administrative advisor for consideration of the North Central Experiment Station directors.

The Corn Belt Livestock Marketing Research Committee held its initial meeting in Chicago in the fall of 1939. Representatives from the Bureau of Agricultural Economics, the Agricultural Marketing Service, and the Farm Credit Administration were invited to participate in the conference. A definite agreement as to the project to be undertaken was not reached until the committee had its second meeting in the fall of 1940. It was decided that the first project should be a comprehensive survey of the existing marketing machinery for livestock and how it functions, under the general title "Livestock Marketing from Farms to Processors." As marketing methods and practices had undergone considerable change over a period of years it was felt that such a survey would provide much information that would be basic as background material for more specialized studies to follow.

The committee is composed of one member from each of the 14 cooperating States, which comprise the 12 North Central States, Kentucky, and Oklahoma. It has general supervision over regional research in livestock marketing and determines the projects to be

undertaken, their scope, purpose, and the general procedure to be followed. Each committee member is responsible for assembling and summarizing the information gathered in his State. All members hold appointment as collaborators with the Bureau of Agricultural Economics which has paid all or part of the travel and maintenance expenses for them when they attended the regular conferences of the committee. I. B. Johnson, Director of the South Dakota Agricultural Experiment Station has served both as general chairman of the committee and as a contact between the committee and the directors in the region. There is no permanent secretary but a member of the committee keeps records of proceedings at each conference.

Three members of the committee are designated a technical committee for each project. This technical committee is responsible for outlining the study, planning the procedure, preparing schedules, and suggesting how the various phases of the work should be carried on and how the assembled data should be summarized.

A representative of the Bureau of Agricultural Economics at the request of the general committee, has assisted the technical committee in planning the various phases of the studies, has consulted frequently with the members for the purpose of coordinating the work among the different States, has assembled the summary information developed in the cooperating States, and has prepared preliminary drafts of the regional reports for consideration by the general committee.

In the first regional study by the committee, information was assembled as to the number, type, and location of livestock markets, marketing agencies, and processors; the channels through which livestock moves; the methods and practices followed by farmers, marketing agencies, and processors when selling and buying livestock; and the means of transportation used during the various stages of marketing. The same type of information was assembled in all of the States on uniform schedules. During the period of the study several conferences were held by the full committee, group conferences were held, and the Bureau representative visited each State three times, primarily in the interest of uniformity. After the regional report had been prepared and reviewed it was given careful consideration at a general conference of the committee and recommended for publication. This recommendation was presented by the Chairman to the North Central directors at their

next meeting at which time publication was approved. The report was printed by the South Dakota Agricultural Experiment Station in the regular bulletin series of that station. Each station ordered a supply of copies for distribution in its own State. The Bureau of Agricultural Economics was furnished a supply for distribution outside the Corn Belt region.

The selection of the second project in the Corn Belt region came in the spring following the attack on Pearl Harbor. At that time it was apparent that truck transportation must be conserved if the transportation situation were not to become critical. The committee therefore decided to undertake a study of the transportation of livestock, other farm products, and farm supplies. Information obtained as to the transportation facilities available in selected communities covered the volume of inbound and outbound traffic, the origins and destinations of shipments, and the type of carriers; the assembly of livestock in the country; the extent to which trucks delivering livestock to markets were loaded to capacity; the nature and extent of return loads; and the existing railroad facilities for handling livestock at shipping points in the country. Ten of the States participated in this study, but in some, work was confined to certain phases only.

This project was organized and administered virtually the same as the first. A new technical committee of three members was made responsible for outlining and planning the various phases of the study. The representative of the Bureau of Agricultural Economics cooperated with both the technical and general committees, assisted in coordinating the work among the States and prepared the preliminary report. A number of conferences were held at different stages of progress of the study, and these were attended also by the members of the committee who did not actively participate in the study. The report of this study was printed at the Missouri Station.

The third project, the one now under way, deals with price differentials for livestock, with attention given first to the price of hogs. The study involves price differentials among markets, and differentials among hogs of different weight and grade groups at selected markets, the base period being 1937-41. The purpose is to assemble as reliable information as possible on normal price relationships so that it may be available for analysis of the price plans and programs that may be under consideration. All of the States

in the region and the Bureau will take part in this study. Working plans were developed by a technical committee for this project.

The procedure followed in the first three projects of conducting the same study in all of the States may require some modification. For example, it has been suggested that small groups of States within the region may wish to work on different projects. States favorably situated with respect to personnel and funds might wish to participate in more than one project at a time. Each project would constitute a segment of a larger research program in the marketing of livestock and livestock products. Under this arrangement, each subgroup could designate a chairman and take responsibility for planning the details of its own study, thus assuming the functions now performed by a technical committee. A Bureau representative, or someone else selected by the regional committee, would cooperate closely with all the groups as well as with the regional committee to assist in outlining, planning, and developing the projects, coordinating the work among the States, and summarizing the findings.

This plan would have the advantage of covering more ground in a given period with the same personnel and funds. At the same time the full regional committee would be in position to advise and counsel with the smaller working groups.

#### *Regional Committee on Coordinating Research in Poultry and Egg Marketing*

The idea of a cooperative research project or a series of coordinated projects in poultry and egg marketing for the North Central region was prompted by poultry production and poultry marketing specialists in the region a number of years ago. Through correspondence and meetings they agreed as a group in 1940 to make a formal request to the directors of the North Central experiment stations for approval to undertake regional studies. This request was granted and V. R. Gardner, director of the Michigan Agricultural Experiment Station, was appointed "referee" to represent the experiment station directors in the region in developing a research program. Members were appointed on the committee from the different States by the directors of the respective stations. Some States are represented by production specialists and others by marketing specialists.

The program adopted by the committee is that of undertaking a series of coordinated studies rather than a single cooperative study in which representatives of all of the States would cooperate. Two, three, or more States will cooperate in each of the coordinated studies. The work was interrupted for a period during the war, but was again resumed in the summer of 1944, at which time the project outlined was reviewed and modified.

Considerable research information on both the marketing and production phases of poultry and eggs has been assembled in the past at the different stations and is available for analysis. The plan is to coordinate much of this information for publication in regional reports. Such publications are now in preparation and two reports should be completed within the next few months.

### *Regional Research in Other Fields*

*Land Tenure.* Cooperative research in land tenure is being conducted on a regional basis in the Southwest and the North Central States where regional committees were formally organized in February 1941 after periods of planning and discussion<sup>3</sup> and in the Northern Great Plains region where much effective work is being done in a coordinated way without formal organization.

The Southwestern Land Tenure Research Committee is composed of the heads of the Departments of Agricultural Economics and Sociology in the States of Arkansas, Texas, Oklahoma, Louisiana, and Mississippi, the Director of the regional project, and representatives from the Bureau of Agricultural Economics, and the Farm Foundation. The study is comprehensive; its objectives are to relate land tenure status to farm family economic and social performance, and to discover the interrelationships of tenure and Government programs.

The regional project is well financed. It has a grant of \$150,000 from the General Education Board, and a somewhat smaller allotment from the Farm Foundation. The Bureau of Agricultural Economics has budgeted a sizable amount for the project. These allotments are in addition to the substantial contributions made by the experiment stations cooperating in the study. This makes a com-

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<sup>3</sup> For more detailed discussion of the development, programs, and methods of operation of these committees see: Hoffsommer, Harold, "Organization and Objectives of the Regional Land Tenure Research Project," this JOURNAL, Vol. XXV, No. 1, Feb. 1943, pp. 245-257; and Case, H. C. M., "Work and Plans of the North Central Regional Land Tenure Committee," the same publication, pp. 258-268.

bined budget of about \$350,000 for the 3-year period of the project.

The study is administered by a director, who is working under the direction of a regional committee, and a central regional staff with headquarters at Fayetteville, Arkansas. In addition to the director, the staff consists of statisticians, subject matter specialists in land economics, farm management, and rural sociology, and clerical and statistical personnel. Field survey personnel is employed for work in the various States as need arises. State employees also work on the regional project, and temporary field workers are employed. Each State committee member heads up the work in his State.

A large part of the data assembled are collected on regional schedules that are adapted to local needs. The regional information is processed at the regional headquarters. Punch cards and machine tabulation methods are employed. Regional reports will probably be issued, and each State may prepare reports based on its own data.

The North Central Regional Committee on Land Tenure Research is composed of one member from each of the cooperating States, the Farm Foundation, and the Bureau of Agricultural Economics. The Farm Foundation contributes funds for the payment of expenses of members when attending conferences. The committee has so far confined its activity to coordinating the information pertaining to land tenure problems that had previously been assembled but not analyzed at the different stations. At first, the committee worked as a unit, but there is now a tendency to assign specific tasks to subcommittees. One report has already been issued and others are in preparation.

*Farm Structures.*—In the North Central States, a regional project on farm structures was approved by the directors of the region in the spring of 1944. Arkansas and Oklahoma joined with the North Central States in this project. W. V. Lambert, Associate Director of the Purdue University Agricultural Experiment Station is administrative advisor and general chairman. A central coordinating committee is made up of the chairman of each of 13 subprojects that are being developed. A small steering committee which meets frequently is set up to help push the program, and to advise on technical problems. Each station in the region has its own farm-structures committee, and manuscripts, when they are prepared, will be reviewed by these committees.

The committees are now assembling the best existing information to help farmers with their post-war building programs. When this has been done the regional research program will be further developed.

### *Some Advantages of Regional Research*

If properly organized and administered, regional research has several advantages over research conducted in individual States. Many economic problems are likely to be national or regional in scope rather than State-wide only. Some differences may exist within a given region, but they are found also within the borders of a given State. Whatever differences exist among sections of a region can be explained and properly interpreted.

By organizing a study on the basis of a region in which the fundamental phases of the problem are fairly similar more complete coverage can be had, a higher average quality of work may be expected, and the findings will have relatively wide application. If the regional research committee divides itself into smaller groups, and each group undertakes a separate study or carries on research on a segment of a larger problem, more ground can be covered in a given time than if all members worked on the same project. This may be more important when committees are large than when they are small. When a problem involves public policy, a committee may be able to do things that members could not do individually.

It should be clearly recognized, however, that regional research in and of itself may not utilize personnel and funds to the best advantage, nor may the accomplishments be superior unless the work is well planned and effectively administered. Poor organization and bad administration on the part of a regional committee may result in research that is both costly and inefficient.

Attendance at conferences where ideas are shared and where the members take part in the analysis of problems are generally stimulating to all who participate. Such conferences are especially helpful to the younger members of the committee who have had limited research experience. The benefits derived, to a large extent, may be abstract and therefore difficult to catalog. Nevertheless, they have a beneficial effect on the thinking, the attitude of mind, and the viewpoint of the members.

The benefits derived by individual committee members are not wholly confined to participation in discussions at conferences. The

assistance received in planning the projects in their States, in determining the schedules to use, and the procedures to follow in assembling information, in summarizing the data, and in preparing the report, is especially valuable. It does not follow that the initiative of the individual researcher is restricted. On the contrary, at the conferences held during the various stages of development of the study all members have an opportunity to appraise the proposals of others, and to participate in formulating plans and determining procedure.

### *Some Problems Likely to Arise in Regional Research*

Upon the character of the personnel comprising research committees depends the success or failure of group effort. This applies to research at all times and in all fields. But in working with others, some additional qualifications may be needed. In addition to such qualities as capability and technical qualifications, members need to have a proper attitude and viewpoint toward group effort, as well as the ability to work effectively with others. Directors and heads of the departments in the participating States will give encouragement to the work by appointing to the committee representatives who have full appreciation of the possibilities of regional research; who can cooperate with other members whose viewpoints on particular matters may differ from their own; and who are in position to take responsibility for their share of the work.

Members of the committee who have administrative duties in connection with regional research should be aware that those positions carry certain definite responsibilities. The general chairman of the committee should keep fully informed on the plans, operations, and progress of work, and should give all possible assistance and encouragement in advancing the studies. The technical or sub-committee charged with the responsibility of outlining a project, suggesting the methodology for conducting the study, and advising with others during the different stages of progress, should take a special interest in the project, should be in position to devote the necessary time to assist in its development, and should take leadership in pushing the study in all of its stages.

The coordinator should strive to advance the study in line with the general policies agreed to by the committee. He should have general technical knowledge of the particular field in which work is undertaken; he should have the ability to work closely with the



members of the committee; and should be in position to fully familiarize himself with all phases of the committee's activities. The necessary time to assist in developing plans, outlining projects, advising with the committee members, and performing such other duties to which he may be assigned, is essential.

To select a project in which there is common interest on the part of all who participate may be a problem. To do so apparently is more difficult when the members from all of the States in the region undertake the same study than when the committee is divided into several smaller groups. It is to be expected that some members will have greater preference for some projects than for others. However, a general agreement as to the choice of study may result after free and open discussion of the proposed projects. If differences still exist, final decision can only be made by a vote of the group. If the committee is broken up into smaller groups, the members have better opportunity to choose the particular project in which they have special interest.

When undertaking regional research the first one or two projects selected should be on noncontroversial problems. This is to avoid unnecessary friction during the period when the cooperative working relationships are being developed. Later when the committee has become more closely knit together as a working group, it is in a better position to undertake studies and formulate policies on subjects that are more controversial.

Perhaps as difficult a problem as any is that of advancing a regional study uniformly in all of the participating States. The State representative last to finish his share of the study virtually sets the pace for the group. As may be expected, some members complete their part of the assignment in a relatively short time, then must wait on others. Dividing the committee into smaller working groups might minimize this problem, especially if each group could be composed of members who would be expected to operate at about the same speed.

In regional research there is the problem of conducting a given study uniformly in all of the participating States. Serious difficulty on this point can be avoided if the project is carefully planned, clearly outlined and the various stages explained in detail, if the workers get together for conferences at frequent intervals while the study is in process, and if someone who is charged with the respon-

sibility of coordinating the work among the States can confer with research members at frequent intervals during the critical stages of the study.

In some States difficulty is encountered in obtaining travel authorizations and funds to attend meetings of the regional committee. This is especially troublesome if conferences are called on short notice. This question has not been serious with the Corn Belt Livestock Marketing Research Committee in that the Bureau up to now has paid expenses of its members when attending regional conferences. Nor has it been a problem with the two regional committees on land tenure as funds for their expenses when attending meetings have been taken care of by the Farm Foundation. In cases where the travel funds are contributed by the cooperating stations it is as important to provide for these expenses as for the ones incurred on projects within the borders of the State if regional research is to be most successful.

In issuing regional reports there is a problem of arriving at satisfactory publication series to avoid confusion in identification. In the case of the Corn Belt Livestock Marketing Research Committee, the first report was printed at the South Dakota Agricultural Experiment Station and was given a number in its regular bulletin series. The Missouri station published, as a bulletin in its regular series, the second report of the committee. An attempt to identify the publications issued by the regional committee in the North Central States as a part of the same series was made by the North Central Experiment Station directors in June 1944 when a report on farm tenure and another on the trucking of livestock were issued. The bulletin "Improving Farm Tenure in the Midwest" by the North Central Regional Committee on Land Tenure Research, printed at the Illinois Agricultural Experiment Station as Bulletin 502, is designated as North Central Regional Publication No. 2. "Trucking Livestock in the Corn Belt Region" by the Corn Belt Livestock Marketing Research Committee, issued by the Missouri Agricultural Experiment Station as Bulletin 479, is designated as North Central Regional Publication No. 3. The first report by the Corn Belt Committee, "Marketing Livestock in the Corn Belt Region" is now considered North Central Regional Publication No. 1, although this identification does not appear on the report. This supplementary numbering of the regional publications is helpful

but it does not entirely clear up the confusion in the identification as each of the regional bulletins issued to date is numbered in the regular bulletin series of the Station at which it is printed.

The New England Research Council follows a somewhat similar plan. Projects on which experiment stations and the council cooperate carry the number of the report in the regular bulletin series of the station where the major work is done and where the report is published. On the cover of each such report is a statement that it is a contribution to the regional program of research sponsored by the council.

The publication plan inaugurated by a group of Southern States that carry on cooperative research in nutrition seems to have a good deal of merit. Their first regional report entitled "The Effects of Maturity, Nitrogen Fertilization, Storage and Cooking, on the Ascorbic Acid Content of Two Varieties of Turnip Greens," appears under a new regional series, namely, Southern Cooperative Series Bulletin 1. The names of the six agricultural experiment stations that cooperated in the study are given on the cover of the publication, but the report is not numbered in the regular bulletin series of any of the cooperating States. By using a separate regional numbering series for regional reports, all publications of regional studies made in a given region would be a part of the same series irrespective of the subject involved or of the particular regional committee responsible for the publication.

### *What of the Future*

Whether the trend toward regional research now under way will continue, or whether present attempt is a "flash in the pan" that will burn itself out quickly will depend on the effectiveness with which the pioneering work is being carried on. If the present regional committees demonstrate that more or better work can be accomplished with given funds and personnel than if the studies were carried on separately in the individual States, then regional research may be expected to become increasingly significant. This will depend on several important factors. Among these are that the research personnel so engaged maintain a regional viewpoint with respect to problems under consideration, and that working as groups will stimulate the personnel to do more effective work.

Adequate personnel and funds naturally are problems that may arise to plague some stations. But there is the question as to what

is adequate. If personnel and appropriations are insufficient to take care of all the work that should receive attention both in the State and in the region the question arises, how should allotments be made? If regional projects are to receive attention on the part of research workers only when other matters are not pressing the contribution to regional work is likely to be negligible. Of course, a situation may develop in a State whereby it becomes impossible to carry on work on a regional project at a time when work is being done in other States. In such an event, it may be advisable for that State to withdraw from participation for the time being, permitting the others to proceed. When the study on livestock transportation was under way, withdrawal was found necessary on the part of several States that are members of the Corn Belt Livestock Marketing Research Committee. In these States, personnel was limited and other war emergency problems had to receive their attention.

It is important that research groups stress quality of work. But this alone is not sufficient. Organizations, techniques of operation, and working schedules of members must be so developed that the output in terms of quantity is significant also. If techniques are cumbersome, resulting in inefficient operation, wastefulness of personnel and funds, and undue delays in completing projects, experiment station directors may rightfully question the advisability of supporting such programs.

Administrators of research, research workers, those who make research funds available, and others who use the results may be expected to watch developments in regional research with keen interest. This is challenging to those who now are actively engaged in it. If a reasonable degree of success can be attained during the period of war, far greater accomplishments should be possible when the emergency is over. Therefore, every effort should be made by the regional committees now operating to establish effective working patterns which may be applied more aggressively when conditions become more favorable, and which may serve as guides for cooperative research in the post-war period.

## POST-WAR IRRIGATION DEVELOPMENTS AND THE NATIONAL AND REGIONAL AGRICULTURAL ECONOMY\*

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A BASIC assumption for the discussion which follows is that there will be substantial irrigation development in the immediate post-war years. Some comments will be offered by way of appraisal of this program, but there is little likelihood that additional irrigation development will be prohibited or restricted even should the verdict be unfavorable. Our major tasks are appraisal of the effects of probable irrigation development, and guidance along lines that seem most desirable.

Irrigation development has strong support throughout the nation and particularly in the West. Construction of reclamation works is advocated not merely by one federal agency, but by a large and diverse group of supporters. Let anyone who doubts the extent and nature of support for reclamation go into any Western State and criticize a projected development within that State; he will shortly discover for himself who supports reclamation and how strongly they feel about it. And in the last analysis, it is Congress which authorizes irrigation projects and appropriates money for them.

It is a matter of common knowledge that the Department of Agriculture and the Bureau of Agricultural Economics have not always been favorably disposed toward western irrigation development. Their opposition seems to have had little effect in impeding or preventing development, but it did remove them effectively from the role of aiding and guiding such developments along sound lines. The participation of various bureaus of the Department of Agriculture in the Columbia Basin Joint Investigations and the Central Valley Project Studies is evidence that a new era of co-operation and participation is under way. The action of Congress in authorizing irrigation development has wisely been taken as the ultimate expression of national policy, and the energies of the various bureaus have been directed toward successful fruition of that policy. I, personally, see in this situation a great opportunity and a great challenge to such abilities as we possess.

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\* Paper prepared for the Annual Meeting of the Western Farm Economics Association, June 29, 1944.

(The views expressed herein are wholly personal, and are not necessarily those of the Bureau of Agricultural Economics, the Department of Agriculture, or the Bureau of Reclamation.)

*The Place of Irrigation in Western Agriculture*

Irrigated agriculture is important in the West. Cash farm income in the eleven Western states was \$1,356,098,000 in 1939 (table 1). This was approximately one-sixth of the national cash farm income. California produced forty-four percent of the regional total, Washington eleven percent, and the other nine states the remaining forty-five percent. The regional cash farm income came from a wide variety of crops and livestock; the region as a whole is extremely diversified, although specialization characterizes most local areas. Somewhat more than half of the total cash income came from crops; the most important commodities were fruits—citrus, grapes and apples particularly—vegetables and grains, though cotton was also important. About one-third of the cash income from livestock came from sale of cattle and calves; dairy products were second, with twenty-seven percent of the livestock income, and the remainder was made up of a wide variety of commodities.

Some of the crops were produced under irrigation, and others were produced on non-irrigated land. Some of the livestock were fed entirely on feeds grown on irrigated land; others received no feed from irrigated land, and still others received feed from both irrigated and non-irrigated land. Of the \$1,356,098,000 cash farm income produced in the eleven Western states, forty-nine percent came wholly from irrigation. An additional thirteen percent was produced partly from irrigated, partly from non-irrigated land. The portion attributable to irrigation was thirty-five percent, or five percent of the total. On the assumptions used herein, fifty-four percent of the total cash farm income of these eleven Western states is attributable to irrigation, and forty-six percent to humid land, dry-land and range land.

In general, the livestock products are consumed within the region. This is true of nearly all the dairy products, beef, and veal produced within the region. Some production from the northeastern edge moves eastward, but this is nearly or completely offset by imports into the region. The region is deficit in hogs; most of the eggs and chickens are consumed within the region. Lambs, turkeys, and wool are largely shipped out. At least eighty percent, perhaps eighty-five percent or even more, of the cash income from livestock products comes from products consumed in the region. In rather sharp contrast is the situation with respect to crops. Three-fourths of the major fruit and truck crops are shipped outside of the region. Our cotton is not milled within the region, though we import a large

TABLE 1. ELEVEN WESTERN STATES: CASH FARM INCOME BY GROUPS OF COMMODITIES, 1939, AND ESTIMATED ORIGIN BY IRRIGATED, PARTLY IRRIGATED, AND NONIRRIGATED PRODUCTION<sup>1</sup>

Commodity group	Cash income (\$1,000)			
	Total	Wholly irrigated	Partly irrigated	Non-irrigated
Crops: total	710,253	514,710		195,543
Food grains	110,863	7,848		103,015
Feed grains and hay	58,778	35,000		23,778
Cotton lint and seed	50,529	50,529		0
Flaxseed	3,759	3,008		751
Total vegetables	178,238	154,165		24,073
potatoes (inc. sweet)	34,104	31,158		2,946
truck crops	119,643	107,889		11,754
other vegetables	24,491	15,118		9,373
Total fruit	211,669	186,671		24,998
apples	29,050	25,641		3,409
peaches	15,111	14,289		822
pears	13,455	11,740		1,715
grapes	30,788	25,743		5,040
strawberries	6,958	3,359		3,099
citrus	73,838	73,838		0
other fruit	42,474	31,561		10,913
Other crops	96,417	77,489		18,928
Livestock and livestock products: total <sup>2</sup>	645,845	144,779	(35%) 183,012	518,054
Wool	38,625	650	(30%) 12,556	25,419
Dairy products	176,682	70,636	(68%) 29,363	76,683
Eggs	56,925	11,859	(50%) 4,718	40,348
Chickens	15,485	4,277	(50%) 1,221	9,987
Turkeys	19,889	4,369	(50%) 11,078	4,442
Cattle and calves	218,166	25,200	(29%) 95,653	97,313
Hogs	37,822	16,238	(50%) 3,000	18,584
Sheep and lambs	82,251	11,550	(31%) 25,423	45,278
Total cash farm income <sup>2</sup>	1,356,098	659,489	(35%) 183,012	518,597

<sup>1</sup> All land receiving any irrigation water has been considered "irrigated," and the production from such land listed as "wholly irrigated." Where livestock obtain part of their feed from irrigated crop or pasture lands, the value of their products is listed as "partly irrigated." The figures in parentheses are the portion of this income attributable to irrigation.

<sup>2</sup> Omitting minor livestock products such as honey.

Source Publications and releases of the Bureau of Agricultural Economics, showing cash income by sources; Agricultural Census, 1940; and judgment of persons familiar with agriculture in the various states. The assistance of Carl P. Heisig and Wendell T. Calhoun is acknowledged.

amount of cotton goods which probably require an equal amount of cotton. Much of our grain and sugar are consumed within the region, but some of these are shipped out. Though precise data are lacking, it seems evident that fifty percent of the cash income from

crops comes from crops shipped outside of the region. Perhaps this portion is as high as sixty-five percent.

*Probable Irrigation Development in the Decade after the War*

Though irrigation development in the post-war decade is likely to be relatively large, any estimates of the acreage involved necessarily involves considerable forecasting of political and other developments.

The National Reclamation Association is known to favor a program of irrigation development in the post-war period. The Association has advocated construction of irrigation works during the war as an aid in meeting the wartime needs for food. In its Bulletin of February 3, 1943, thirty-two projects were listed as under construction; the ultimate acreage of new land was given as 2.5 million acres and the area to receive a supplemental water supply as 6.6 million acres. Though no time-table was attached to these developments, there was a clear implication that they could be completed within a few years after the war. Additional projects might easily be added to this list as the end of the war approached or during the post-war period. This Association has a fairly large and very influential membership in the West, and has had success in getting appropriations for irrigation developments.

The Bureau of Reclamation has recently presented a post-war program.<sup>1</sup> "The major objectives of the inventory are to show how the development of the unused water resources of the western half of the country could be made most effectively into instruments to cushion the transition from war to peacetime economy." The inventory includes 236 projects, 40 of which are now authorized for construction (table 2). These projects, when completed, will make water available for  $6\frac{3}{4}$  million acres of land not now irrigated and will provide supplemental water for nearly  $9\frac{1}{2}$  million acres. The authorized projects, out of this list of post-war projects, include  $2\frac{3}{4}$  million acres of new land and supplemental water for nearly  $5\frac{3}{4}$  million acres. The authorized projects are therefore somewhat less than half of the post-war program. No specific time table is attached, but construction could be completed in 5 years if funds were made available.

<sup>1</sup> Bureau of Reclamation, Department of the Interior—Inventory of Irrigation and Multiple-Purpose Projects for Construction in the Post-War Period. June 6, 1944. Statement transmitted to Senator Carl Hayden, Chairman, Subcommittee, Roads and Reclamation, Committee on Post-War Economic Policy and Planning.



TABLE 2. INVENTORY OF IRRIGATION AND MULTIPLE-PURPOSE PROJECTS FOR CONSTRUCTION IN POST-WAR PERIOD, 17 WESTERN STATES

State	No. of proj- ects	Irrigation (1000 acres)		Power (1000 kilowatts)		Total costs, 1940 prices (million dollars)
		New Lands	Suppl. water	Installa- tion, author- ized projects	Est. firm projects under study	
Arizona	16	444	323	225	1,093	640
California	31	1,689	3,505	446	239	606
Colorado	18	337	1,924	145	159	330
Idaho	20	308	1,709	70	150	169
Kansas	3	103	0	0	0	19
Montana	33	562	35	0	95	159
Nebraska	10	97	32	0	1	39
Nevada	4	25	106	0	16	16
New Mexico	9	51	243	0	16	54
North Dakota	9	403	0	0	0	59
Oklahoma	9	181	6	0	0	35
Oregon	14	266	93	0	8	60
South Dakota	5	234	14	0	1	41
Texas	11	313	535	18	0	113
Utah	18	90	269	9	109	165
Washington	5	1,131	6	352	622	370
Wyoming	21	371	459	0	20	77
Total <sup>1</sup>	236	6,705	9,364	1,765	2,579	2,952

<sup>1</sup> Total includes individual units of some major projects. Miscellaneous projects not included.

Based on table in Inventory of Irrigation and Multiple-Purpose Projects for Construction in Post-war Period, submitted on June 6, 1944 by Secretary Ickes to Senator Carl Hayden, Chairman, Subcommittee, Roads and Reclamation, Committee on Post-war Economic Policy and Planning.

This post-war program consists of a few large projects—Columbia Basin in Washington, Central Valley in California, Gila in Arizona, Anderson Ranch in Idaho, Colorado-Big Thompson in Colorado—and many smaller projects. Under normal conditions, construction and development of the larger projects would be spread over several years. Many projects, particularly the larger ones, have hydro-electric power development as well as irrigation. Many of them have flood control features and benefits, and some will aid in navigation. The full potentialities of multiple-purpose water development are sought for each project. These benefits other than irrigation should be kept in mind in viewing the costs of these projects.

The Bureau of Reclamation has recently<sup>2</sup> announced a plan for

<sup>2</sup> News Release, May 9, 1944.

development of the upper Missouri River Basin involving irrigation of 4.8 million acres not now irrigated and provision of a supplementary water supply to .5 million acres. No time-table is given for these estimates, but they are referred to as "post-war." In a statement before the Senate Commerce Committee on May 4, 1944, in discussing H. R. 3961, Commissioner H. W. Bashore stated that "in the major subregions of the West, water could be economically conserved to assure ultimate irrigation results," as follows:

	New Land	Supplemental Supply
	<i>(Million Acres)</i>	
Sub-humid and Great Plains	4.5	.7
Inter-Mountain	6.4	8.0
Pacific Coast	11.1	3.0
Total	22.0	11.7

Considering all factors, provision of a full water supply for 3 million acres and of a supplemental supply for 3 million acres seems probable for the first decade after the war. This is less than half of the "post-war inventory" submitted by the Bureau of Reclamation, or is approximately the same as the presently authorized program, and we assume twice as long a period as the minimum in the Bureau of Reclamation's "post-war inventory." This estimate may prove to be much too low; certainly, it could be far exceeded if funds were made available. Assuming that supplementary water supplies add one-fifth to the productivity of the areas involved, the equivalent of approximately  $3\frac{1}{2}$  million acres of new irrigated land will be available for cultivation in the first decade after the war. The full effect will not be felt within the period, because of the time interval involved in bringing newly irrigated land into full production. The probable agricultural production from these lands and its relation to present production in the region will be explored later.

Several factors might accelerate or retard this probable program. On the acceleration side, a need for public works to relieve unemployment might easily become a dominant factor. If the nation has several million unemployed, and if it resorts to public works as a palliative, then irrigation construction is likely to come in for its share. The war-time expansion of the construction industry, beyond any reasonable post-war expectations, may call for a program of public works—at least, there will be a strong political support for such a program. Sentiment for land settlement opportunities, particularly for veterans, will be an added incentive. Should circum-

stances strengthen the influence of these factors, the development program might easily be twice as large as I have assumed. On the retarding side, a "balance-the-budget" philosophy in national affairs will be pushed by powerful groups and may become dominant. If so, irrigation projects, no less than other public works, will not receive generous public funds. If agricultural surpluses develop again renewed opposition to additional irrigation will come from established agricultural producers. In spite of their rumblings in the past, their arguments have not been very influential. Curiously enough, this argument has usually been used by agricultural producers of other regions, who are not likely to be hurt seriously, and has not been advanced actively by the western farm groups who should have been most concerned.

The net effect of these retarding and accelerating forces might be considerable, though impossible to estimate at present. For the sake of illustration, the assumption is made that increased productivity will equal that from  $3\frac{1}{2}$  million acres of newly irrigated land. This compares with an irrigated area in the eleven Western states in 1939 of  $18\frac{1}{2}$  million acres, perhaps half of which lacked a full water supply.

### *Consequences of this Probable Reclamation Program*

The first and most obvious consequence of such a reclamation program will be in the stimulus to business, particularly to the construction industry, due to the expenditure of public funds. Expenditures of the general magnitude of \$1,500,000,000 are likely to occur during the decade following the war, if our assumed program is followed. Direct employment on-site and off-site, would be of the general magnitude of 100,000 men annually for several years, and might be much higher at the peak. This compares with approximately 270,000 men in the construction industry of the eleven Western states in 1940, as shown by the 1940 Census. Building of the necessary dams and canals would employ a substantial proportion of the pre-war construction industry specializing in this type of work. A new Henry Kaiser might emerge from this construction program, or at least firms now in the field would welcome such a relatively large volume of public work.

Less immediate, but more significant for the long pull, will be the increase in agricultural productive capacity. On the average, new irrigated lands do not come into full production for five years or longer. Lands receiving supplemental water will increase in pro-

ductivity more rapidly. In general, the new irrigation projects will include lands whose productivity will average as high as the lands now irrigated in the West. Since the most favorable irrigation developments have already been exploited, it might appear that further development will be on less productive lands. Future projects are likely to be more costly. But much of the land irrigated in early developments was located at high elevations in the range areas, where hay is the chief crop and yields are low. Future developments will probably include land more productive than the least productive lands now irrigated, though perhaps less productive than the best lands now irrigated.

Market considerations are likely to prevent or inhibit production of intensive, specialty crops, so that these crops will be less important on new lands than on presently irrigated lands. It is not a lack of suitable land which now limits the production of most fruits and vegetables in the West. We could produce more apples, peaches, pears and grapes if the market would absorb them at remunerative prices. We could produce more oranges and lemons, but in view of the market outlook, may have difficulty in maintaining our present volume of citrus production, in the face of increasing competition from Florida and Texas. We could produce more lettuce, carrots and other truck crops if the market would absorb them without decrease in price. For several of these commodities, California or Western regional production is a major share of the national production. If we expand, the added volume depresses price to a degree depending on the elasticity of demand for the particular commodity, and we feel the effect markedly. Some of the new lands may be better adapted to fruit and truck crops than the present producing areas; shifts in areas of production and some increases in production may occur, but production of fruits and vegetables can hardly increase nineteen percent merely because the total area irrigated increases nineteen percent. The increase may easily be large enough to put substantial pressure on the prices of fruits and truck crops.

For what will the new irrigated land be used? Much of it will be used to produce forage and feed grains, and these will provide the basis for expansion in livestock numbers. Dairy production will surely increase more than proportionately to the increase in population within the region, and a shift to an exporting basis for dairy products seems probable. There will be an initial loss in price when butter is first shipped out of the region. Further increases,

however, will affect the national price but little; the demand for butter produced in the region is almost infinitely elastic once the region gets on an export basis. Considerable opportunity exists for an expansion in livestock feeding, particularly in cattle feeding. The result will be some increase in total weight of meat produced, and also an improvement in quality of meat available. Some of the poorest lands to be irrigated may be used for pastures, on which cattle and lambs may be raised and fattened. There will be some increase in pork production, though scarcely enough to meet the demands of the region.

Considering all factors, our assumed irrigation development equivalent to  $3\frac{1}{2}$  million acres of new land in the decade following the war will mean approximately \$150,000,000 increased cash farm income for the region, at 1939 prices, when the newly irrigated lands have come into full production. This is an increase of slightly more than ten percent. This estimate is necessarily rough, even granting our assumption as to area to be irrigated. The increase will far exceed ten percent for some commodities, and will fall far short of ten percent for others. The increase will probably vary within the region; it will probably be least along the eastern edge of the region, where dry-land wheat and range livestock are so important, but may be greater in California, Washington, and Idaho.

TABLE 3. ELECTRIC GENERATING CAPACITY, ELEVEN WESTERN STATES

Period	Generator capacity (1,000 kilowatts)		
	Total	Hydro-electric	Other
Pre-war (end of 1941)	6,896	4,601	2,295
War (end of 1944)	9,020	6,573	2,447
Post-war increase <sup>1</sup>	2,300	2,000	300

<sup>1</sup> Increase over 1944.

Taken from Statistical Abstract, 1942, and estimates furnished by Federal Power Commission.

The irrigation development of the post-war period will mean an increase in hydro-electric power production. Most future irrigation projects will be multiple purpose projects, usually with some hydro-electric power production. Assuming that the ratio of power production to irrigated acreage which has prevailed on recent reclamation projects will continue for future projects, our estimate of productivity equal to  $3\frac{1}{2}$  million acres of newly irrigated land will mean an increased generator capacity of roughly 2,300,000 kilowatts. The comparison of this figure with pre-war and present generating capacity is shown in table 3. Pre-war generator capacity

in the West was roughly two-thirds hydro-electric. Generator capacity has risen sharply during the war, and electric energy production has increased even more rapidly. While there may be some recession after the war, installed capacity and output are likely to continue to rise.

It is difficult for an agricultural economist to estimate the economic effects of more, and presumably cheaper, electric power in the region. It may help to draw industries here, particularly those industries which consume large quantities of electric power. More probably, abundant and low-cost power will affect the production methods and processes employed. Use of large amounts of power per worker should aid in maintaining our present high per capita income. Some increased electrification of home and farm may occur, but the region is already largely electrified in the areas where potential demand justifies electrification. Increased power use per consumer is likely. One interesting possibility is substitution of hydro-electric for steam power. Much of our steam power is developed from the use of oil as a fuel. With a dwindling oil reserve, we may decide to shift to hydro-electric energy.

*Problems and Potentialities of an Expanded Post-war  
Reclamation Program*

Before attempting an appraisal of this anticipated reclamation program, it seems desirable to enumerate and briefly discuss some of the problems, dangers, and potentialities of such a program. Many of these are conjectural; they may or may not eventuate.

Perhaps a major danger is that in one way or another these irrigation projects will become a vast soldier settlement scheme. Here will be new farming opportunities, created by federal funds, available just when economic opportunities for returning veterans are needed. What could be more natural that veteran settlement on these lands? This country has given preferential land settlement opportunities to the veterans of every past war; why should this one be an exception? Every economist interested in land knows that veteran settlement programs after World War I had an unhappy history. Development of raw land into productive farms by persons with limited capital is a difficult process attended by considerable hardship, even at best; when complicated by a rapidly falling price level, and by settlers many of whom are ill-adapted to farming, it is likely to become impossible. If reclamation development occurs on the scale previously assumed, many of the settlers

will and should be ex-servicemen. These men will be young and will have limited capital; if they are really interested in farming, they may find their best opportunity on a new irrigation project. The test should be their knowledge of farm life, and their attitude toward farming as an occupation. If they would have made good settlers in the absence of their war experience, then they should be good settler prospects and deserving of special assistance because they are veterans. If aid to veterans is extended in fields other than agriculture, the veteran will be less tempted to undertake settlement of raw land because it is the only opportunity open to him. Should special assistance be given to veterans for settlement on irrigation projects, it is to be hoped that colonies composed wholly of veterans will be avoided.

A closely allied question is the optimum degree of planning for these irrigation projects. It is idle to talk of planning vs. no planning; even should the decision be to throw the settler wholly on his own, with no help or guidance of any kind, this is still a form of planning. At the other extreme, the settler might be placed on a fully developed farm unit, whose size, layout, buildings and other major features had been decided for him. Some would refer to this as over-planning, and would urge that it be avoided. If an adequate supply of settlers is to be available, and if the groups most in need of farming opportunity are to obtain the available opportunities, then some special form of credit must be available to settlers. Farmers with adequate capital will generally choose farms in older, established areas. A major argument in favor of reclamation is that it provides agricultural opportunity to those who would otherwise not have it; if this objective is to be met, some means must be found to provide capital to the settler who lacks it. Special credit programs are needed. The nature of such programs and the most suitable agency to administer them are important problems on which there is unfortunately no accepted consensus. The credit agency must decide the type and degree of planning that it will adopt.

Another major problem relates to the relative emphasis on the various purposes of future projects. Since they will generally be multiple purpose projects, there will be different types of benefits and different groups who should bear part of the costs. Multiple purpose projects can usually be operated with relatively greater or lesser emphasis on each of the project purposes. Flood control is

often said to require an empty reservoir as insurance against a flood, whereas power generation and irrigation require the filling of the reservoir whenever surplus water is available. The relative emphasis on the project purposes may vary, and will undoubtedly be a subject of contention as new projects are authorized. A major conflict has arisen with respect to the development of the Missouri River, for instance. Shall navigation improvement be undertaken even though it requires water necessary for irrigation development, or vice versa? This is an issue involving not only the "irrigation states," but more particularly involving an interregional struggle between the upstream arid states which want irrigation and the downstream humid states which want cheap transportation. This controversy is now active on the Missouri River and has been raised on the Snake River; it will almost surely arise on every other important stream flowing eastward from the Continental Divide. Related to the question of the relative emphasis on the purposes of multiple purpose projects is the question of the agency which should construct and manage multiple purpose projects. If a project is to provide flood control, hydro-electric power and irrigation, some would say that it was immaterial whether the project be undertaken by an agency primarily interested in navigation and flood control, or by an agency primarily concerned with irrigation. Others would contend that the construction agency was a matter of great importance.

Closely allied to the question of relative emphasis on project purposes is the matter of cost allocation. Under present federal law, costs allocated to navigation and flood control are not reimbursable; costs allocated to irrigation are reimbursable over long periods and without interest; while costs allocated to power must be reimbursed with interest. The amounts allocated to each of these purposes is extremely important to the general taxpayer and to the beneficiaries of each type of project service. Cost allocation is a notoriously slippery, tricky, arbitrary business at best; and when the economic welfare of some groups is at stake, it may be impossible to approach the job without bias. The irrigation interests have sought maximum revenues from hydro-electric power, so that irrigation water costs would be a minimum. On one recent large project, the proposed allocation would require power sales to repay all direct power costs, all joint costs, and half of the direct irrigation costs. On the other side are the power advocates, who



contend that low-cost electric energy will promote the economic development and prosperity of the region to the benefit of all, including even the farmer whose irrigation water is more expensive thereby. The members of this group believe that public distribution of power is essential in order to secure the potential benefits of low-cost power. They point to the experience of the Tennessee Valley Authority, which has demonstrated that the cost of power is determined by the price of power, within very wide limits. When the price of electric power is reduced, its use is increased so greatly that the cost falls, often fully proportionately to the reduction in price. The cost of hydro-electric energy is chiefly an overhead cost, with an extremely low marginal cost. A "cheap power" policy may mean rates far below those under a "maximum revenue" policy, and yet maintain earnings almost as high. The public power advocates have prevailed, at least to the extent that reclamation law requires that preference shall be given to public power distributing agencies.

Another important problem is to secure a wide distribution of the benefits arising from irrigation development. Two major considerations arise: (1) to get land into the hands of actual settlers, in units which they can farm and which will produce an adequate income; and (2) to prevent landowners from obtaining large unearned increments in land values, at the expense of the actual settlers. Both of these objectives have been sought through the acreage limitation and anti-speculation features of reclamation law. Under existing law, which has developed and been strengthened over a forty-year period, the owner of raw land must agree to dispose of all land in excess of 160 acres at an appraised price established without regard to the federal irrigation development, if he wishes to obtain irrigation water through the project works. This law has been moderately effective in promoting a wide distribution of land ownership and in making land available to actual settlers at reasonable prices. The Columbia Basin Act of 1943 strengthened these provisions for that project. In addition, studies have sought to make more specifically applicable the broad objectives of "family farms" and "adequate level of living."<sup>3</sup> More recently, an attempt has been made to remove all restrictions on size of landholdings and

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<sup>3</sup> See Columbia Basin Joint Investigations, particularly problems 2, 6, 9, 13, and 14. Also, Fisher, Lloyd H.—What is a Minimum Adequate Farm Income? this JOURNAL, August, 1943. Vol. XXV, No. 3.

on prices of raw land, for the Central Valley Project. Whatever may be the balance of favorable and unfavorable factors involved in irrigation development, few will deny that prospects for favorable results are strengthened, without any encouragement to unfavorable results, if the economic opportunities provided by irrigation development are widely distributed and if the settler is given the maximum opportunity for success. Retention of acreage limitation and anti-speculation features of reclamation law seems imperative if the broad social purposes of reclamation are to be achieved.

### *Summary and Appraisal*

Is the post-war reclamation program, which we have assumed will be adopted, good national policy? Is it desirable from the viewpoint of the western region?

There is no question but that a post-war reclamation program of the magnitude assumed will raise serious problems both for the new areas and for established farming areas. The settler on new land faces difficult problems of developing and paying for his farm. On many projects, it is possible to set up a program under which the able, hard-working man with limited capital can obtain and ultimately pay for a farm. For the man adapted to such conditions, a new reclamation project can be made into a superior economic opportunity. Farmers in older areas are likely to question the need for more farm land in the United States. Most agricultural economists will agree with them. Competent estimates indicate that an increase of twenty percent, or even forty percent, in total agricultural production in the decade following the war is entirely probable even under somewhat less favorable agricultural prices than prevail now. If these estimates be correct, why do we need more land?

Would economists ever have found development of new land profitable and economically rational, in the history of this country? Opening of the Ohio and Mississippi Valleys brought farm abandonment to New England and the Middle Atlantic states. Later, the opening of the western Corn Belt and the Great Plains brought ruinously low farm prices to the older farming areas. The development of the western Cotton Belt blighted the older cotton areas. It has become commonplace to say that it cost \$2.00 to mine every \$1.00 of gold during the California and Klondike gold rushes. May

not development of new farms have cost as much or more than they were worth, even to the pioneer, and especially to the nation which saw farm values shrink in the older farming areas? Certainly, there were many, many failures and living conditions were often pitifully poor. Perhaps a careful balancing of marginal costs and marginal revenue would have ruled out a major part of the developments which occurred. Yet out of this process came a great nation.

This nation has a growth complex; nowhere is this stronger today than in the West. We want more people, larger cities, more industries. We are firmly convinced that bigger means better. Our economic planning will fail to find popular support, may even encounter active opposition, if we ignore this deep-rooted attitude. We have an increased population in the West, particularly in California, and we need support for it. Increased agricultural production cannot employ all of the newcomers, or even half of them, but it can assist. Increased agricultural production not only means more people on the land; it means more people in rural areas providing goods and services to farm people, and more people processing and transporting the commodities produced.

If we have adequate nutrition for every class of people, after the war, then we may need all our prospective agricultural production, and more, too. If this situation develops, the production of newly irrigated land can be absorbed without difficulty. On the other hand, inadequate diets for a large segment of our population, (roughly the situation prior to World War II), will cause burdensome surpluses even in the absence of irrigation development. In other words, irrigation development, like many other aspects of our economy and social structure, stands or falls on the level of economic activity of the nation. We can absorb—may need—the products, under some conditions; under others, they will be unneeded or even burdensome.

Increased irrigation in the West presents a great opportunity, a great challenge. If properly taken advantage of, the region and the nation will benefit. If fumbled, every problem will rise, full scale, and the advantages will be lost.

## REPAYMENT EXPERIENCE ON FEDERAL RECLAMATION PROJECTS\*

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MUCH of the agriculture of the western states is based on irrigation developments that have been carried on by both public and private agencies. The repayment of the construction costs of these works has varied with the individual projects. Some have been very successful. Others have resulted in the loss of large sums by those who financed the ventures. This paper is limited to repayment experience on Federal Reclamation Projects both because comparable data on these projects are more readily available and because it appears now that future irrigation development will be financed largely by Federal funds.

The original Reclamation Act of 1902 provided that the construction cost be repaid in equal annual installments, not exceeding ten, beginning with the date specified in the public notice. The extension act of August 13, 1914,<sup>1</sup> lengthened the period of repayment to 20 years. The Fact Finders Act of December 5, 1924<sup>2</sup> provided for an indefinite period of repayment with the annual charge calculated as 5 percent of 10-year average crop return.<sup>3</sup> While this act was in force 10 contracts were executed providing for payment of construction charges on a crop-production basis. This provision was repealed by the Omnibus Adjustment Act of May 25, 1926<sup>4</sup> which substituted the 40-year repayment plan in force today.<sup>5</sup> The Government has not charged interest on the funds advanced for the construction of irrigation works.

In the years immediately following the passage of the Reclamation Act of 1902, construction was started on a number of projects

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\* This paper presents the personal viewpoint of the author and is not an official statement of the Department of Agriculture. It was presented at the Western Farm Economics Association meeting held at Los Gatos, California, June 27-29, 1944.

<sup>1</sup> 38 Stat. 686.

<sup>2</sup> 43 Stat. 672, 701.

<sup>3</sup> Federal Reclamation Law, Annotated, July 1936. "The installment of the construction charge per irrigable acre payable each year shall be 5 per centum of the average gross annual acre income for the ten calendar years first preceding, or for all years of record if fewer than ten years are available, of the area in cultivation in the division or subdivision thereof of the project in which the land is located, as found by the Secretary annually." Page 295.

<sup>4</sup> 44 Stat. 636.

<sup>5</sup> Variable repayments are provided for in the Reclamation Act of 1939 (53 Stat. 1187). To date no project has made use of the provisions of that act.

and by 1918, water had been made available to settlers on 27 projects. The first part of this analysis deals with these projects because it is felt that sufficient time has elapsed on them to indicate some of the financial problems involved in Federal reclamation of land by irrigation.

The projects have been classified on the basis of the repayment experience to June 30, 1938, the latest date for which published repayment data are available. Congress has authorized the abandonment of five projects. It was concluded that on each of these there was no opportunity for settlers to pay out and that the Government would be better off to abandon the projects and not expend further funds in their administration.

Four projects have paid out so slowly that unless their repayment record improves in the future, more than 250 years will be required to pay out the total amount repayable June 30, 1938. Five other projects have repaid at rates in the past, that if projected into the future will require 125 to 250 years for payment of the total amount repayable. Six projects have repaid at a rate that will require 75 to 125 years, and the remaining seven projects will, if past records are indicative of the future, repay the total amount repayable in less than 75 years. Most of the projects have been repaying for 20 to 30 years.<sup>6</sup>

These long periods are due to the fact that various moratoria have been granted from time to time on the various projects, to the fact that on some projects, only a part of the irrigable area is irrigated and at present paying construction charges, and to the long repayment periods authorized under some of the crop payment plans.

The question may be raised as to whether there has been an improvement in repayments as the projects have become more stabilized. On 18 projects, repayments have been made since 1917 or before. The average amount repaid per year on these projects to June 30, 1918 was \$1,022,460 (table 1). In the next nine years<sup>7</sup>

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<sup>6</sup> The projects included in each group are as follows: *Abandoned projects*, King Hill, Garden City, Hondo, Williston, and Buford-Trenton; *more than 250 years*, Milk River, Sun River, Lower Yellowstone, and Umatilla; *125 to 250 years*, Grand Valley, Uncompahgre, North Platte, Belle Fourche, and Shoshone; *75 to 125 years*, Boise, Huntley, Newlands, Okanogan, Carlsbad, and Klamath; *less than 75 years*, Salt River, Yuma, Orland, Minidoka, Rio Grande, Strawberry, and Yakima. Allowance was made for the fact that on some projects different divisions were constructed and opened for settlement at different dates.

<sup>7</sup> Data for the fiscal year ending June 30, 1928 are not available.

TABLE 1. RELATION OF REPAYMENT EXPERIENCE TO REPAYMENTS MADE BY FEDERAL RECLAMATION PROJECTS IN DIFFERENT PERIODS

Total time required for repayment if past rate continues	Projects	Average amount repaid per year <sup>1</sup>			Average number of years required for repayment if rate of past 11 yrs. continues
		From public notice until June 30, 1918	From June 30, 1918 to June 30, 1927 <sup>2</sup>	From June 30, 1927 to June 30, 1938	
		<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Years</i>
More than 250 years	3 <sup>3</sup>	36,468	31,324	40,132	428
125 to 250 years	3 <sup>4</sup>	123,172	235,368 <sup>5</sup>	255,308	134
75 to 125 years	6	312,365	391,293	324,334	101
Less than 75 years	6 <sup>5</sup>	550,455	1,297,216 <sup>6</sup>	1,358,758	56
All projects	18	1,022,460	1,955,201	1,978,532	81

<sup>1</sup> Calculated from data published in Annual Reports of the Bureau of Reclamation.

<sup>2</sup> Data on repayments not available for year ending June 30, 1928.

<sup>3</sup> Milk River project not included because of short repayment period.

<sup>4</sup> Grand Valley and Uncompahgre projects not included because of short repayment periods.

<sup>5</sup> Rio Grande project not included because of short repayment period.

<sup>6</sup> Increases due largely to expansion of projects. If data were available by divisions of projects it would be possible to indicate repayments on a more comparable basis.

repayments averaged \$1,955,201 per year on these same projects. However, much of this increase was due to increases in the size of a number of projects, rather than to a marked improvement in the rate of repayment. It is impossible, since data are not published by project divisions, to make this analysis on a strictly comparable basis. For the 11-year period 1927 to 1938, repayments averaged \$1,978,532 per year. As this was a period of generally depressed agricultural income, the fact that payments averaged as high as in the preceding nine years, indicates a relatively better repayment experience during this latter period. Even so, at this latter rate per year, repayment of the total amount repayable on the first group of projects would require 428 years, the next group 134 years, the third group 101 years, and on the last group, the group with the best over-all repayment record, 56 years. The average for all 18 projects would be 81 years. Writing in 1934, John W. Haw and F. E. Schmitt summed up the repayment status of projects at that time in these words:

"As the application of a new payment system after change of legislation authorizing extension of term was in most cases applied only to the unpaid balance, the basis of repayment at present in

force is best described in terms of the total annual repayment of all the projects. As stated in section 1, this annual repayment for current years (suspended 1931 to 1934 by moratorium acts, however) is approximately \$3,000,000, representing slightly less than  $1\frac{1}{2}$  percent of the total repayable Government expenditures. The average repayment time at the present rate of repayment would thus be 65 to 70 years if the entire repayment from the beginning had been on the same basis. Since the total balance still repayable to the United States is \$157,000,000, the average remaining time of repayment after 1934 is about 50 years.<sup>8</sup> It should be remembered that this figure of 65 to 70 years makes no allowance for any future moratoria which may be granted. In view of the fact that Congress has passed relief measures of various kinds in the past, it seems reasonable to assume that a similar policy will prevail in the future, and that projects which get into difficulty will again be granted aid of one kind or another.

It should be pointed out that these calculations of rate of repayment are based on the period elapsing since the date of public notice or of execution of a repayment contract rather than the date that water was first made available. If account were taken of the additional time between the availability of water and the date of public notice, the calculated rate of repayment would be much slower on some projects.

The 22 projects still in operation in 1938 owed the Government nearly \$143,000,000 (table 2). The total sum repayable on these projects as of June 30, 1938 was \$191,904,869, of which \$49,190,996, representing 26 percent, had been repaid. On the four projects repaying at an extremely slow rate, only 5 percent of the total amount repayable had actually been repaid. This does not mean that these projects were delinquent by 95 percent, because much of the amount repayable was not yet due under the terms of the repayment contracts. It does indicate the size of the Government's investment in these projects as of that date and gives some indication of the rate at which the investment was being liquidated.

Some indication of the reason why different projects have had different repayment experiences is brought out by a comparison of the repayment experience with the irrigation debt per acre and with the increase in the value of land due to irrigation (table 3).

<sup>8</sup> John W. Haw and F. E. Schmitt, Report on Federal Reclamation, December 1, 1934, p. 66.

TABLE 2. REPAYMENT EXPERIENCE ON 22 FEDERAL RECLAMATION PROJECTS AS OF JUNE 30, 1938<sup>1</sup>

Total time required for repayment if past rate continues	Projects	Total repayable to June 30, 1938 <sup>2</sup>	Amount repaid as of June 30, 1938	Proportion repaid
	<i>Number</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Percent</i>
More than 250 years <sup>3</sup>	4	23,582,645	1,114,964	4.7
125 to 250 years	5	45,843,174	6,940,153	15.1
75 to 125 years	6	32,608,820	8,457,811	25.9
Less than 75 years	7	89,870,230	32,678,068	36.4
Totals	22	191,904,869	49,190,996	25.6

<sup>1</sup> Data from *National Irrigation Policy—Its Development and Significance*, 76th Congress, 1st Session, Senate Doc. No. 36, February 1939, pp. 64–66.

<sup>2</sup> Total repayable is the construction cost plus operation and maintenance before public notice, plus any operation and maintenance deficits, arrearages and penalties, minus any construction revenues, contributed funds, nonreimbursable appropriations, nonreimbursable costs and authorized charge-offs.

<sup>3</sup> Chain Lakes Storage Project included with Milk River Project.

The total irrigation debt before repayment as of June 30, 1943, averaged \$91 per irrigable acre for the 22 projects and was \$86, \$90, \$82, and \$98 respectively for the four groups. These differences in total cost per acre are so small that they cannot be blamed for the differences in repayment ability among the various projects.

TABLE 3. RELATION OF REPAYMENT EXPERIENCE TO TOTAL IRRIGATION DEBT BEFORE REPAYMENT AND TO THE INCREASE IN LAND VALUE DUE TO IRRIGATION, 22 FEDERAL RECLAMATION PROJECTS

Total time required for repayment if past rate continues	Projects	Total repayable, 1943 <sup>1</sup>		Increase in land value per acre due to irrigation <sup>4</sup>	Ratio of amount repayable to increase in value	
		Per irrigable acre <sup>2</sup>	Per acre in cultivation 1942 <sup>3</sup>		Per irrigable acre	Per acre in cultivation
	<i>Number</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Percent</i>	<i>Percent</i>
More than 250 years <sup>5</sup>	4	86	139	28	307	496
125 to 250 years	5	90	131	55	164	238
75 to 125 years	6	82	104	74	111	141
Less than 75 years	7	98	111	153	64	73
All projects	22	91	117	104	88	112

<sup>1</sup> Total repayable as of June 30, 1943 without deduction for repayments. Authorized charge-offs have been deducted. Data from the Bureau of Reclamation.

<sup>2</sup> Irrigable acreage is the area for which the Bureau is prepared to supply water.

<sup>3</sup> Area in cultivation as reported by the Bureau.

<sup>4</sup> See text for method of calculation.

<sup>5</sup> Chain Lakes Storage Project included with Milk River Project.



There appear to be significant differences, however, in the increases in value of land due to the application of the irrigation water.

Measurement of this increase in land value due to irrigation water presents many difficulties. Ray P. Teele, in his book *The Economics of Land Reclamation*, presents the results of a study he made of the 1920 census data.<sup>9</sup> At that time he made a special tabulation of the value of land in farms watered by Government works and the value of nonirrigated land in farms in the same counties. Differences in value were assumed to represent increases due to irrigation. Mr. Teele's data were used for 1920 and a modification of his procedure was used on the 1930 and 1940 Census data.

The value of land in irrigated and nonirrigated farms was taken from the 1930 and 1940 censuses for the county or counties in which each Federal Reclamation Project is located. The nonirrigated land in irrigated farms was assumed to have the same value per acre as the land in the nonirrigated farms in the county. Subtracting the value of this land from the value of all land in irrigated farms gave a value which was presumed to represent the value of lands actually irrigated. The difference between the value per acre of land actually irrigated and the value per acre of nonirrigated land in the same county was assumed to represent the increase in value due to the irrigation water. An increase in land value due to water was thus obtained for each census year for each project. A simple average of the three census values was taken as the increase due to irrigation water for each project. The group averages were weighted by the acreage in cultivation in each project in 1940.

Those projects that have been paying out most slowly showed an average increase in land value of only \$28 per acre, while the projects paying out most rapidly showed an increase of \$153 per acre (table 3). The total amount repayable per irrigable acre was over three times as great as the increase in value on the slow-paying projects, but only two-thirds of the increase in value of the projects currently paying out at the more rapid rate. The percentage ratios of debt to value on the four groups of projects were respectively 307, 164, 111, and 64 percent.

On some projects not all of the land has been settled. On the projects paying out most slowly, only 61 percent of the irrigable

<sup>9</sup> Teele, Ray P., *The Economics of Land Reclamation*, 1927, pp. 225-227.

land was cultivated in 1942 compared with 88 percent on those projects paying out most quickly (table 4). On most projects, the fact that only a part of the so-called "irrigable" acreage is in cultivation, reflects overly optimistic estimates either of the suitability of the land or of the supply of water in relation to requirements.

TABLE 4. RELATION OF REPAYMENT EXPERIENCE TO PROPORTION OF IRRIGABLE AREA IN CULTIVATION, 1942, AND TO CROP VALUE PER ACRE, 1940 AND 1942, 22 FEDERAL RECLAMATION PROJECTS<sup>1</sup>

Total time required for repayment if past rate continues	Projects	Irrigable acreage, 1942	Acreage in cultivation, 1942	Proportion of irrigable acreage in cultivation	Crop value per acre in cultivation	
					1940	1942
	<i>Number</i>	<i>Acres</i>	<i>Acres</i>	<i>Percent</i>	<i>Dols.</i>	<i>Dols.</i>
More than 250 years	4	298,122	183,225	61	24	33
125 to 250 years	5	515,160	356,963	69	25	45
75 to 125 years	6	392,850	309,284	79	34	64
Less than 75 years	7	940,526	826,537	88	54	105
All projects	22	2,146,658	1,676,009	78	41	77

<sup>1</sup> Data for 1942 from the Bureau of Reclamation. Data for 1940 from Annual Report of the Sec. of the Interior, 1941, pp. 6-9.

Since these projects have been completed for a number of years, the acreage in cultivation is perhaps more representative of the size of the project than is the acreage classified as irrigable.

The gross value of crops per acre, on the projects that have repaid at the slowest rate, has been low. In 1940, the crop value per acre in cultivation on these four projects was only \$24 compared with \$54 on the projects with the best repayment records. In 1942 the values were \$33 and \$105, respectively. It is interesting to note that the latter group of projects showed a greater response to the price increases which occurred between 1940 and 1942.

Congress, through various adjustment acts, the most important of which was the Omnibus Adjustment Act of 1926, has authorized the writing off of all of the charges against the five abandoned projects, and for varying proportions of the charges against certain of the other projects. By June 30, 1943, \$17,131,187, which represented 8.0 percent of the net cost of the first 27 projects, had been written off as losses (table 5). No write-offs of construction charges have yet occurred on later projects. Of this loss, \$3,324,636 was on the five abandoned projects and the remaining \$13,806,551 repre-

sents adjustments of construction charges made on other projects in an attempt to keep the charges at a level that settlers could pay. The largest proportional reduction was made in the Okanogan project where \$997,862 was written off. This represented 70 percent of the net cost of this project. Nearly 56 percent of the net cost of the Newlands project was charged off as a direct loss.

TABLE 5. RELATION OF REPAYMENT EXPERIENCE TO LOSSES ALREADY WRITTEN OFF AND AN ESTIMATE OF PROBABLE FUTURE LOSSES, 27 FEDERAL RECLAMATION PROJECTS, AS OF JUNE 30, 1943

Total time required for repayment if past rate continues	Projects	Total repayable June 30, 1943, plus authorized charge-offs <sup>1</sup>	Abandoned works, non-reimbursable cost authorized charge-offs <sup>1</sup>	Estimated future losses assuming:	
				Irrigable acreage repays 100% of increased value due to irrigation	Acreage in cultivation repays 100% of increased value due to irrigation
	Number	Dollars	Dollars	Dollars	Dollars
Abandoned projects	5	3,324,636	3,324,636	—	—
More than 250 years <sup>2</sup>	4	28,647,327	3,096,214	17,203,697	20,238,253
125 to 250 years	5	50,611,641	3,997,327	18,280,514	25,980,734
75 to 125 years	6	37,979,599	5,962,510	2,946,189	8,438,321
Less than 75 years	7	92,809,905	750,500	0	0
All projects	27	213,373,108	17,131,187	38,430,400	54,657,308
Proportion of total	—	100.0	8.0	18.0	25.6

<sup>1</sup> Data from the Bureau of Reclamation.

<sup>2</sup> Chain Lakes Storage Project included with Milk River Project.

In spite of the adjustments that have been made, it has already been indicated (table 1) that a number of projects are paying out at a much slower rate than their repayment contracts call for. The question arises as to whether further adjustment will have to be made in the repayment terms of these projects.

It seems highly probable that some further adjustments will have to be made. In 1929, a committee of persons, selected because they were familiar with western irrigated agriculture, recommended to the Secretary of the Interior that the Government write off its entire investment in the Umatilla project and make appreciable adjustments for the poorer land on the Milk River Project.<sup>10</sup> No

<sup>10</sup> Economic Survey of Certain Federal and Private Irrigation Projects, 1929, Bureau of Reclamation, p. 23.

such action has yet been authorized by Congress, but repayment ability of these two projects has not materially improved since the committee report of fifteen years ago. The Government's current investment in these two projects approximates \$12,000,000.

No one can foretell the future, but the past sometimes serves as a guide to what to expect in the future. Those projects on which the increase in value of land due to the irrigation water was highest relative to the irrigation debt have had the best repayment record; those on which the increase in value was lowest have had the poorest repayment record. If it is assumed that the entire increase in the value of all the irrigable land can be repaid, then a loss of approximately \$38,000,000 must be expected in addition to the \$17,000,000 already written off (table 5). The sum of these two amounts equals 26.0 percent of the net cost of the 27 projects. If it is assumed that the increase in value due to irrigation will apply only to the land presently irrigated, and that the other land, though irrigable, will not be brought under cultivation, then the probable additional losses on these 27 projects, under this assumption, will approximate \$55,000,000.

The fact that the Government advances the funds for construction on an interest-free basis and for a somewhat indeterminate period makes rather difficult the task of comparing repayment experience on Federal projects with the experience on privately financed projects. The latter have by no means a clear record of repayment. In Bulletin 21-K, the California State Division of Water Resources published the status of refinancing plans of 72 irrigation districts in California as of January 1, 1940. At that date, nine districts were in default, five of which had little prospect of refinancing, six districts had refinanced their bonds at less than 30 cents on the dollar, 26 at from 30 cents to 70 cents and nine from 70 to 90 cents. The remaining 22 districts had not found it necessary to default or refinance. However, there were included in this latter group several irrigation districts which had been formed to take over the works of earlier ventures that had failed. Similar records of defaults on private irrigation ventures could be cited in the other Western States. Federal Reclamation Projects are not the only irrigation ventures with poor repayment records.

On the credit side, these 22 Federal Reclamation Projects have provided 50,000 farms which furnish homes for 165,000 people. An additional 500,000 persons live in towns on or tributary to these

projects. Roads, schools, and other public services have been provided by these various communities. Much of the tax revenue necessary for the building and maintenance of these services has come from land irrigated by government water. The projects are all "going concerns" in the sense that farmers are cultivating the land, improving their homes and farms, increasing their equities, and living their lives much as farmers elsewhere on irrigated land are doing. Only in the matter of repayment, and only on some of the projects, is the picture somewhat cloudy.

All of the reasons for the poor repayment experience are not easily discerned. Poor soil has been an important factor and probably is the most important. Inadequate water supplies have necessitated abandonment of some irrigable land on some projects and the construction of additional storage on others. Political pressure appears to have forced consideration of some projects that were economically unsound. Land speculation on some projects diverted to early holders of the land, part or all of the increment in value that should have gone to pay construction costs. Much more detailed study is necessary to ascertain all of the reasons why the repayment experience has been poor.

Since 1920, six projects, the principal purpose of which is to irrigate new lands, have been constructed and placed in operation by the Bureau.

The Yuma Mesa Auxiliary Project has provided water for a small acreage in Arizona devoted to intensive cultivation. The net cost to June 30, 1943 was \$900,710, representing \$222 per irrigable acre. The repayment of construction costs on this project was handled under special legislation which provided that the Secretary of the Interior was "authorized to . . . sell . . . the lands . . . at public sale under suitable regulation, for not less than the reasonable value per acre of the land plus the estimated cost per acre of reclamation works to be constructed for the reclamation of said lands so set apart plus the proportionate cost per acre of the works previously constructed and available therefor."<sup>11</sup> Departmental regulations issued October 3, 1919 provided for sale of lands at \$225 per acre.<sup>12</sup> Purchasers were allowed three years in which to make payments.

<sup>11</sup> From Section 1, Act of January 25, 1917, Ch. 20, 39 Stat. 868. See Federal Reclamation Laws Annotated, U. S. Dept. of the Interior, Bureau of Reclamation, July 1936, p. 208.

<sup>12</sup> *Ibid.*, p. 208.

Only a portion of the irrigable acreage has been placed under water. For the last six years that crop data are available (1937-1942) the acreage in cultivation has been a little more than 1,400. In 1942, it was 1,480 acres or approximately 37 percent of the total irrigable area. The provision for the payment of construction charges before the project was settled resulted in the return to the Bureau of a considerable proportion of the cost of construction. There is, however, this considerable acreage of land not yet irrigated. It appears doubtful whether this land will pay its proportionate share of the unpaid construction charges. The fact that only 37 percent of the project is irrigated after 20 years of operation indicates an unwillingness on the part of settlers to risk \$225 per acre in an attempt to subdue the remaining lands.

The other five projects are located in Montana, Oregon, Idaho, and Wyoming. The crop values per acre on these projects in 1940 averaged only \$23 per acre (table 6), or only a little more than

TABLE 6. PROPORTION OF IRRIGABLE ACREAGE IN CULTIVATION, 1942, AND CROP VALUE PER ACRE, 1940 AND 1942, 5 FEDERAL RECLAMATION PROJECTS<sup>1</sup>

Project	Irrigable acreage, 1942	Area in cultivation, 1942	Proportion in cultiva- tion, 1942	Crop value per acre	
				1940	1942
	<i>Acres</i>	<i>Acres</i>	<i>Percent</i>	<i>Dollars</i>	<i>Dollars</i>
Bitter Root, Montana <sup>2</sup>	16,431	16,431	100	16	24
Frenchtown, Montana	4,878	1,823	37	24	46
Vale, Oregon	30,000	28,041	93	23	46
Owyhee, Oregon-Idaho	100,690	88,208	88	23	60
Riverton, Wyoming	42,500	38,500	91	21	29
Total or average	194,499	173,003	89	23	47

<sup>1</sup> Data for 1942 from Bureau of Reclamation. Data for 1940 from Annual Report of Sec. of the Interior, 1941, pp. 6-9.

<sup>2</sup> Private project reconstructed with Government funds.

half the value on all regular projects of the Bureau that year, and one dollar per acre less than the value of crops in the four older projects with the poorest repayment records (see table 4).

The construction costs per irrigable acre averaged higher on these five projects than they did on the earlier construction due undoubtedly to the combination of greater difficulty in obtaining suitable projects and to the higher price levels prevailing during construction. The total amount repayable per irrigable acre on these projects averaged \$161 (table 7). The increase in the value of

TABLE 7. TOTAL AMOUNT REPAYABLE, AMOUNT REPAYABLE PER IRRIGABLE ACRE, VALUE OF IRRIGATION WATER AND RELATION OF DEBT TO VALUE, 5 FEDERAL RECLAMATION PROJECTS, AS OF JUNE 30, 1943

Project	Total repayable <sup>1</sup> to June 30, 1943	Repayable <sup>1</sup> per irri- gable acre	Value of irrigation <sup>2</sup> - water per acre	Ratio of debt to value
	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Percent</i>
Bitter Root	1,464,279	89	37	241
Frenchtown	279,099	57	58	98
Vale	4,878,589	164	66	248
Owyhee	18,432,731	183	66	277
Riverton <sup>3</sup>	6,310,987	148	47	315
Total or average	31,365,685	161	59	273

<sup>1</sup> Data from the Bureau of Reclamation.<sup>2</sup> Based on 1930 and 1940 census values only.<sup>3</sup> Power facilities installed by United States included in costs and power revenues will pay a substantial part of the cost of project.

TABLE 8. IRRIGABLE ACREAGE, CULTIVATED ACREAGE, TOTAL REPAYABLE, AND AMOUNT REPAYABLE PER IRRIGABLE ACRE, AND PER ACRE IN CULTIVATION, 13 FEDERAL RECLAMATION PROJECTS FURNISHING SUPPLEMENTAL WATER SUPPLY

Project	Irrigable acreage, 1942	Area in cultiva- tion, 1942	Total repayable to June 30, 1943	Total repayable <sup>1</sup>	
				Per acre ir- rigable	Per acre in cult.
	<i>Acres</i>	<i>Acres</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
Fruitgrowers Reservoir, Colo.	2,600	1,889	193,075	76	105
Pine River, Colorado	37,680	29,266	3,327,280	88	114
Upper Snake River, Idaho	93,682	76,963	2,798,992	30	36
Humboldt, Nevada	32,661	12,577	1,310,672	40	104
Truckee Storage, Nevada	29,876	11,874 <sup>2</sup>	1,080,650	37	91
Baker, Oregon	7,312	7,164	276,589	38	39
Burnt River, Oregon	17,016 <sup>3</sup>	15,282	599,735	35	39
Stanfield, Oregon	6,000	4,708	97,830 <sup>4</sup>	16	21
Hyrum, Utah	8,312	5,993	923,579	112	155
Moon Lake, Utah	72,537	52,565	1,592,268	22	30
Ogden River, Utah	19,654	13,909	4,358,118	222	313
Salt Lake Basin, Utah	89,412 <sup>3</sup>	86,912 <sup>2</sup>	2,685,487	30	31
Sanpete, Utah	12,717	10,376	373,256	29	36
Total or average	428,950	329,478	19,627,531	46	60

<sup>1</sup> Data from the Bureau of Reclamation.<sup>2</sup> Acreage irrigated 1940. *Reclamation Handbook*, Bureau of Reclamation, 1942, p. 83.<sup>3</sup> Maximum irrigable acreage, *Reclamation Handbook*, op. cit., p. 83.<sup>4</sup> Total repayable to June 30, 1941, Annual Report, Sec. of the Interior for the year ending June 30, 1941, p. 46.

land due to irrigation averaged but \$59, resulting in a ratio of debt to value of 273 percent. This does not bid well for the future repayment of construction costs on these projects. The record of the Riverton project on which water has been available since 1925 tends to bear out the statement. As of June 30, 1938, no repayment of construction costs had yet been made, with water still being made available to settlers on a water-rental basis.

The Bureau has constructed 13 projects which furnished a supplemental water supply to 329,478 acres in 1942 (table 8). This is 77 percent of the irrigable acreage the works were designed to serve. There is a wide range in cost per acre among this group of projects, a range which is not significant without further data as to the amount and adequacy of the supplemental water supplied. However, it is appropriate here to examine the Bureau's investment in projects of this type. On the Ogden River project, the total repayable costs were \$222 per irrigable acre, and \$313 per acre in cultivation in 1942. On the Hyrum Project they were \$112 and \$155 per acre. On three other projects, the Fruitgrowers, the Pine River, and the Humboldt, the costs exceeded \$100 per acre in cultivation. It will require an intensive and profitable agriculture to repay costs as high as these.

The droughts, the migration of families and the heavy relief expenditures in the Great Plains area during the latter thirties led to the Water Conservation and Utilization program.<sup>13</sup>

"This program is designed to rehabilitate communities dependent on agriculture. It came into being largely as a result of the exodus of farm and other families from the Great Plains and their migration westward in search of irrigated land on which to make a fresh start in life. . . .

"Twelve projects have been authorized. They demonstrate what can be expected of the program. Through the use of limited reimbursable funds, appropriated direct from the Federal Treasury, supplemented by allotments of Work Projects Administration labor and Civilian Conservation Corps enrollees, projects of this type advance the conservation of human and physical resources. Highly desirable social and economic objectives are attained."<sup>14</sup>

The program provides for rough levelling of land, construction of small farm ditches, and definite plans for land-use readjustments.

<sup>13</sup> Interior Department Appropriations Act, 1940 (53 Stat. 685).

<sup>14</sup> Reclamation Handbook, op. cit., pp. 55-56.



"Construction of the irrigation facilities is the responsibility of the Bureau of Reclamation. Land preparation and settlement are the responsibility of the Department of Agriculture . . . which will also assume responsibility for the operation and for repayment contracts on most of the projects so far authorized."<sup>15</sup>

Construction has been started on eleven of the twelve projects and by June 30, 1943, the Bureau had made an investment of \$5,593,154, or approximately 25 percent of the estimated total cost. These projects will provide a full water supply for an estimated 82,910 acres and supplemental water for 48,525 acres. The estimated total cost per irrigable acre is \$172, about 44 percent or \$76 of which is reimbursable. The remainder of the cost will be covered by the non-reimbursable funds provided for W.P.A., C.C.C., etc.

The Bureau of Reclamation had under construction in 1943, 17 additional projects. The present repayable investment of the Government as of June 30, 1943, was \$408,157,643. The completed cost of these projects is estimated at \$1,030,912,000. It is estimated that they will furnish a full supply of water to 2,465,000 acres and a supplemental supply to 4,412,000 acres. These new projects are becoming more complex. Power revenues are expected to pay a much larger share of construction costs than was the case on older projects. Flood control and municipal water supplies will also bear part of the costs on some projects.

Examination of past experience can serve no useful purpose unless it provides some guides for future action. This brief analysis has brought out some of the reasons for the success or failure of the various projects.

The repayment experience of the different projects is definitely correlated with the increases in land values due to the application of irrigation water. This increase in turn is due to the fact that under irrigation, the land has produced greater net income than it did without irrigation. This increase in land values sometimes is referred to as the direct benefit from irrigation. The direct benefit exceeded the costs of construction on those projects with the best repayment records. The direct benefits were only a third of the cost on those projects which are currently having the greatest difficulty making repayment.

The costs on some of the more recent projects are quite high. The

<sup>15</sup> Reclamation Handbook, op. cit., p. 57.

total amount repayable to June 30, 1943 averaged \$183 per irrigable acre on the Owyhee project and \$164 per irrigable acre on the Vale Project. The estimated costs of the Boise-Payette and Shoshone-Heart Mountain projects now under construction are respectively \$173 and \$159 per irrigable acre.

These projects are located in areas in which the lands now under irrigation are devoted largely to general field crops and to irrigated pasture, which is utilized to a considerable extent by dairy cattle. It is presumed that the agriculture on these newer projects will not differ markedly from that on the older projects in the same areas.

This type of agriculture does not produce high gross returns per acre, and as a consequence, the benefits from irrigation, while definite and measurable, are not large. In 1940, the gross crop values on different irrigation districts within the Boise Project ranged from \$15 to \$35 per acre and averaged \$24 per acre for the project. On the Shoshone Project, the range was from \$19 to \$30 per acre with the project average \$26 per acre. The 22 older projects on which most of this analysis is based had total repayable costs which averaged only \$91 per irrigable acre (table 4) and gross crop values per acre in cultivation in 1940 of \$41 (table 5). Even so, the repayment experience on these projects as a group has been poor. It is difficult to see how irrigation farming with gross returns as low as \$20 to \$30 per acre can repay construction charges of \$160 to \$180 per acre.

There is need for a continuing effort on the part of the Bureau of Reclamation to appraise adequately and conservatively the benefits from irrigation and to recommend to Congress only those projects for which reasonable repayment plans can be presented. There is grave danger, both to the Government and to the settler, in the setting up of projects on which any appreciable number of settlers find difficulty in meeting repayment charges. Widespread delinquency, frequent moratoria and downward adjustment of contracts are detrimental to the morale of the settlers and operate in the long run to destroy their will to repay their contracted obligations. Considering all of the projects built, the men of the Bureau have done well a difficult job. There is a challenge to them and to the agencies working with them in the job that still remains.

## LAND-GRANT COLLEGE POST-WAR AGRICULTURAL POLICY\*

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A REPORT of a committee of the Land-Grant College Association on agricultural policy is a notable event and deserves more attention by far than any book on the subject that might be written by an individual author. The first full-dress effort of the Association along these lines was in 1927, after Congress had been struggling for eight years with the agricultural disturbances following the last war.<sup>1</sup> A second effort was in 1932, after the parity ratio had declined to 55 on the 1910-14 base, and the Federal Farm Board had struggled with the problems of agriculture for three years.<sup>2</sup> The violence of the depression in 1930-33, and the extremity of the measures taken to deal with it from 1933 to 1937, apparently kept the deans and directors so distraught that they were not able in these years to settle down to the task of thinking through an over-all policy. This third time they have seized upon the breathing spell between getting the war program launched and the reconversion period to do what they should have done in 1918, but did not get round to do until 1927.

That they have done this is highly important. It indicates that the leaders in this important group of institutions have become increasingly conscious of the impact on agriculture of its rapidly changing social environment. Back in the early twenties, the deans and directors tended to think of agriculture like old-time professors of agronomy and animal husbandry. Secretary Henry C. Wallace, at a meeting of the Association in 1922, challenged them to stop thinking of agriculture's problems as mostly within the individual farm, and to begin taking note of external factors also. They have made great progress since then in the direction he pointed. The events of the years since 1922 have been powerfully educative.

Significant also in this connection is the fact that the committee preparing the first report consisted of seven deans or directors and

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\* Postwar Agricultural Policy. Report of the Committee on Postwar Agricultural Policy of the Association of Land-Grant Colleges and Universities. October, 1944.

<sup>1</sup> Report of the Special Committee on the Agricultural Situation, Proceedings of the Land-Grant Colleges and Universities, November 1927.

<sup>2</sup> Report on the Agricultural Situation by the Special Committee, Proceedings of the Land-Grant Colleges and Universities, November 1932.

one economist; that the second committee included three deans and three economists; and that of the eighteen on this last committee, five are professors of economics, and two of the administrators were once professors of economics. The ten deans and directors also included an engineer, a forester and a home economist.

Had a report been prepared in 1918, it could not have done what the present report does. The deans and professors of that time had been living in an agricultural fool's paradise from 1900 to 1917, with the world's population pressing upon the world's food supply, prices of farm products, in consequence, rising faster than other prices, and wages hanging down around their 1900 levels.<sup>3</sup> They would not have foreseen in 1918 the changes that were to be caused by the war, and if they had, would have fought against the needed adjustments. This new statement of policy, in consequence is upon a different plane than its predecessors. It senses more fully the interdependence of the agricultural and other parts of the economy, and the common interest of all in high-level employment, and likewise the interdependence of the economies of the different nations. These subjects, to be sure, were discussed in the two earlier reports; but they were not underlined as in this one.

In the strict sense of the word, this report, like its predecessors, is a report of the committee which prepared it and not of the Association. The Foreword states that "the eighteen members of the committee have insisted that they alone are responsible for what is contained in the report." No doubt some of the deans and directors have blinked at a few of its bold pronouncements; but probably it faithfully represents the best thinking of the group.

The titles of the three reports indicate one important difference among them. The first two devote most of their space to a description of the "situation" and the reasons for it, and a minor part of it to *measures*. This report is nearly all discussion of measures. It therefore is able to analyze measures in considerable detail, and as a result to make more positive recommendations.

An over-all observation is that the report as a whole suggests a bit too much of reciprocity in the Committee. The other members of the Committee deferred too much to those among them who were

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<sup>3</sup> In a survey which the writer made for the Wisconsin State Defense Council in 1917, the wages reported for factory labor in the cities and towns outside of Milwaukee ranged from \$1.25 to \$2.00 for 10-hour days. Ordinary carpenters around the state were getting 25 to 35 cents an hour in 1910, and ordinary day labor 15 to 20 cents an hour.

assumed to understand best the conservation problem, the tenure problem, prices, and especially credit and the international aspects of agricultural policy. The result is that the report has a somewhat variegated pattern, very forward-looking in places, and somewhat the opposite in others.

As a whole, however, the policy outlined is definitely progressive, and the Committee is to be commended highly upon the results of its labors. If the reviewer were a congressman he would vote for legislation that would implement it just as it is. He would suggest some amendments, to be sure, but if they were defeated, as probably they would be, he would still vote for it as it is, and be as happy about it as an economist has any right to expect to be. *The difficulty is that too many other congressmen wouldn't*—at least, not if they understood that they were voting for, within five years after the war, 10- or 12-cent cotton, \$10 hogs, 75-cent wheat, and the like. The question would then arise: What departures, what compromises, do we dare accept? It is one shortcoming of the report that it does not help enough with the second and almost inevitable step.

It seems also necessary to say that if the legislation did not go further than suggested in this report in some important particulars, it would prove inadequate in the first five or ten years after the war. The program it outlines would have been entirely adequate for the period 1900–19, or any fairly normal period. It would probably have come as near to sufficing for the years 1920–29 as one has a right to expect of any program. But it would not have sufficed for 1930–39; and will not for 1946–60. The agriculture of this country is going to be faced with much greater changes after this war than after the last one. To begin with, production has expanded much more, and agriculture as a whole never has retracted in the past, and no strong reasons can be advanced for its doing so this time. The levels of national income associated with the high-level employment now being hypothesized do not promise a competitive-market domestic demand for food greater than 20 percent above that of 1935–39 if we take the BAE's index numbers of per-capita consumption as a guide.

In the second place, the agriculture of our country, especially some parts of it, is going to experience more drastic technological changes than in any period since 1900 at least. The combination of much higher wages for farm labor, new labor-saving equipment, and money to buy such equipment and also cheap fertilizer, is going to make over a lot of our farming.

The most important effect of high-level employment is scarcely mentioned in the report. If we really have it, several million more workers than normal will migrate to the cities in the next ten years, farm wages will rise still further till they are somewhere nearly on a level with urban wages, and in a few decades a half million or so of low-income farms will be absorbed within the boundaries of others or revert back to timber. The report should assign major import to the jobs that "full employment" will provide, and only second place to the "good consumer markets."<sup>4</sup> The good markets alone will still leave us with surpluses, making still necessary a vigorous program of production and consumption adjustments.

The report does state that consumption adjustments will help—in fact, devotes a total of thirty-three lines to their discussion. It mentions two types of consumption adjustment, "educational work to promote good nutrition," and "subsidies, in one or more forms, to promote food consumption by low-income families." Having just completed, along with a joint committee of representatives of agriculture, business and labor set up by the National Planning Association, a draft of a national food and nutrition program in which agriculture's part runs to five or six pages, or one-seventh of the total, the writer is inclined to think that the Land-Grant college group has not given enough emphasis to this part of a "sound agricultural policy." A little space for this might have been found by squeezing a little the discussion of forest, range or water conservation, or even of tenure and housing.

Possibly the Committee did not consider consumption adjustment as agriculture. Well, then, neither is marketing of farm products after they leave the farm, or credit on the other side of the bars in the bank cashier's window. Certainly the offish, and even hostile, attitude of many agricultural leaders toward supplementary food distribution measures was a major factor in their slow evolution from 1934 to 1940.

No proper objection can be raised to the Committee's referring to these measures as "subsidies"; but it might add to clarity to point out that public education, and even police and fire protection, are subsidies in the same sense. We tend to apply the term subsidy only to new types of aid to individual citizens and firms.

The importance of consumption adjustment to agriculture is that if the diets of all our people were raised to a really adequate level,

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<sup>4</sup> Candidly, the reviewer does not expect to see employment near enough to full to absorb farm migrants at the rate here indicated.

and production adjusted to provide the needed foods, this alone would use all the surplus we can expect with high-level employment, and a good fraction of it if we have lesser degrees of employment. The more unemployment, the more the need for such distribution. The report refers to the need for direct price supports to "cushion" the effects of possible depressions. It will be much better policy to try to sustain the demand for food by various measures, including the stepping up of supplementary domestic distribution.

The contribution of production adjustment to the postwar situation is presented more fully; but still it is not pointed up sharply except possibly in the case of cotton and wheat. The surpluses that will face us soon after the war ends, unless we forestall them, cannot be handled by half-hearted measures such as we attempted in 1933-40. Consumption adjustment alone will not suffice because it will not develop fast enough. If, in addition, we could take forty million acres out of cotton, and wheat, rye, rice and other food crops, and convert them into forage and feed-grain crops, to be used to produce milk, butter, cheese, eggs and meat, the effect would be like taking thirty-five million acres out of production. Supplementary food distribution measures could easily insure the consumption of these foods. They are the kinds of foods which, along with vegetables and fruits, are most needed to improve diets. A million dollars spent on a program of production and consumption adjustment thus integrated would achieve two or three times as much surplus reduction as anything attempted in 1933-40. It would, of course, give us more soil conservation at the same time. If such a program is to be in position to help in 1947-8, we must start upon it at once. Three years are needed to get more dairy cows into production.

The discussion of the international phases of agricultural policy runs pretty much in old grooves—tariff reduction, multilateral trade, the United States as a creditor nation, we can't sell if we don't buy, etc. Back in the early thirties, we broke out of what were then the old grooves and came forth with reciprocal trading agreements. They represented a new approach to the problem. We are greatly in need right now of another new approach, one that will accept the principles of the trading agreements, but go well beyond them in application. The nature of such an approach is perhaps suggested by the word "positive." This means not stopping with attempts to sell abroad, but also helping to develop buying power abroad. It means planning production and exchange in advance and

internationally. It means that this country will deliberately plan with other countries to produce certain foods needed to raise their dietary levels, and to import other products, including foods, to balance the accounts. The exchanges can be as many-cornered as the heart desires. Unavoidably a limited amount of direction and control will accompany such collaborative efforts—but it will be *public* and not *cartel* control.

Easily the best developed section of the report is that on Conservation. This was terrain which half of the committee knew well from long battling over it. Its recommendation, as one would expect, is that the soil conservation program of the nation be turned over “in large part” to “appropriate state agencies, in accordance with the well-accepted grant-in-aid principle.” It seems to be implied that federal assistance should be kept within close bounds, lest it carry with it too much control. Excellent as is this section of the report, it would be more helpful if it spelled out a more realistic plan for federal-state coordination—one that goes far in the direction indicated, but not the whole way.

There is even more need for spelling out the form of federal-state coordination needed in handling the work of the Farm Security Administration. The only statements bearing on FSA organization are that all government lending for rehabilitation purposes should be placed under one agency to avoid overlapping and reduce costs, that the land-grant colleges should not perform lending, regulatory and similar activities, and that the function of regional offices needs to be studied. That close supervision of families receiving rehabilitation loans is needed, is clearly stated, but nothing is said as to who is to do it. Unfortunately, the use of such loans is defined as “to relieve emergency situations.” They had this purpose when they were begun, it is true. The loans are now better designated as “habilitation” loans—designed mainly to help families that never were habilitated.

The remainder of this review consists of brief running commentaries arranged in the order in which they naturally suggest themselves:

The best paragraph in the report is the following:

“Although need for non-farm opportunities has been emphasized, it is vital to maintain in agriculture a sufficient number of efficient people. Consequently, attention should be focused not only on economic rewards of farming, but also on every aspect of rural living. In this way, agriculture will be able to retain its share of



ambitious and able young people, for it remains true that many thousands of persons who possess the necessary experience and energy, put forth the effort required, use good judgment, and take advantage of available private and public aids, will find their best opportunities on a farm."

The excellent definition of freedom as meaning "economic opportunity open to everyone who is able and willing to work" would have been still better if it had reached a step further back to include equal access to good health and education in childhood and youth. (To add equal access to resources would perhaps be going too far!)

The most serious defects of the competitive market for farm products are scarcely mentioned at all. These are its failure to adjust total agricultural output downward and keep the terms of trade of agriculture and the rest of the society in good balance, and failure to prevent prolonged overproduction of particular products in certain situations.

The cotton program presented to the Pace Committee by Secretary Wickard on December 5 is stronger and better developed than the Committee's statement, but the two follow closely similar lines.

The discussion of the cotton problem refers to the too little differential in prices among the grades as resulting in relatively high production of low-grade cotton for which there is little demand. The official figures on this point show that from 1928-32 to 1938-42, ginnings of short-staple cotton (under 1 inch) in the United States were reduced from 76 percent of the total to 43 percent,—a rather amazing achievement, but of course not enough.

A fraction of the 3,000,000 family-type farms mentioned ought to be called "smallholdings" instead. A smallholder's income will satisfy some of these, but most of them need more resources if they are going to be able to give their children a chance at a good education.

The purchasers of farms under the tenant-purchase program have thus far averaged assets of \$1800 against \$7400 of farm capital invested in their enterprises. This 24 percent measures up pretty well to the 15 percent, plus a good equity in the working capital, suggested in the report. Perhaps in some territory the loans have been made on too narrow a margin; but the Tenant-Purchase administrators deserve commendation rather than implied censure on this score. Also it is more important to use the tenant purchaser's resources in properly equipping the farm than in making down

payments on the real estate, under the very good purchase contracts that are offered.

The part-time farming of the future may include more production for the market than in the past, because of shorter workweeks and the development of equipment suited to such farming. The average part-time farm in 1930 had 47 acres of land. Some of this is woodland that needs to be improved.

No mention is made of one of the most important needs of a land purchase program—to assist in the reconditioning and re-laying-out of land into economic units and transferring it back to private ownership.

No provision is made for long-term credit at very low interest rates to assist owners in improving their land by drainage, small-scale irrigation, pasture improvement, woodland improvement and the like. Such credit instruments are particularly needed for woodland development.

Credit will also need to be available as never before to facilitate the absorption of land into neighboring farms as mechanization and migration proceed. Otherwise, large acreages of land will grow up to brush in some sections of the country.

The highest levels reached in the report are in the sections asking for an extension of social security to farm people, for improving our system of tenancy and establishing the legal status of the cropper, for raising wages of farm laborers and improving their housing and working conditions, and for better rural school and rural health facilities.

The only dangerous suggestion is in the proposal that the "permanent national agricultural policy committee" be composed of representatives from the Land-Grant Colleges, the U.S.D.A. and the national farm organizations. A committee so constituted might easily become a governmentally entrenched pressure group in behalf of agriculture, or particular agricultural institutions, because of the close affiliation existing between some of the major members in these groups. The report starts out with strong condemnation of government in behalf of special interest groups, and ends with a proposal that could readily lead to exactly such a result. The deans and directors would be well advised to ask for some help on their committee from representatives of the general public. They surely would need such protection sometimes if they mean what they say.

## NOTES

### EFFECTS OF CHANGES IN OUTPUT ON FARMERS' COSTS AND RETURNS\*

THE principal objective in wartime food production has been to find ways and means of increasing output of the products that were most needed. It has not been possible always to work out programs that resulted in obtaining the needed increase with the least possible expenditure of farm resources. After the war, changes in demand are likely to necessitate changes in the volume of output of many farm products. To make the necessary adjustments at the lowest possible cost to individual farmers and to the nation as a whole, an understanding is needed of the nature of the impact of changes in output on the farmer's costs and returns.

It is often stated that the only way to achieve a nationally desirable distribution of production is to permit prices to fluctuate freely in accordance with changing demands for the different products, and then for producers to adjust their production in response to price changes. Under wartime price control this is obviously impossible. But it is doubtful whether the desired result would be achieved even under peacetime price and production conditions; first, because under any conditions that have been experienced, the prices of many production resources are institutionally determined at levels that limit their use—freight rates, for instance; and second, because of the high proportion of fixed to variable costs in farming. Although the nature of farming costs, and of changes in costs with changes in the volume and the distribution of production of farm products should be well understood, there are many evidences that this is not the case, hence some further discussion may be in order.

Production changes in the immediate pre-war period as well as wartime changes indicate that the farmer's reaction to changing costs and prices varies in accordance with prevailing cost conditions on his own farm for different levels of output of each product. The individual farmer can maximize his income only by increasing his output up to the point where the cost of the last unit of product is equal to the price received; and most important of all, *the price to him does not vary with changes in his own output*. With a given price expectancy he plans production in accordance with cost and other production conditions on his own farm.

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\* This statement presents only the author's personal viewpoint on the problems that are considered.

The shape of the cost curve for a single product on the individual farm depends on: (1) opportunities for producing alternative enterprises, and (2) whether the present level of production maximizes the use of fixed resources. *The additional costs per unit of additional product*, of wheat for example, will rise sharply if some other product is crowded out as wheat is increased. If there are no alternative products the additional costs for added output are only the variable expenses that must be incurred to increase output. Sometimes these variable expenses are very low in relation to the value of the added output.

It is now quite evident that in the pre-war period most family farms had partially utilized capacity in land, labor and equipment. Looking forward beyond the war period, when more farmers will have bought new mechanical power and associated equipment, and when perhaps more members of the family will be home on the farm, labor and equipment resources again will be only partially utilized. This will create pressure for expanding the size of the business—either in terms of acres or by increasing the yield per acre or per animal. Reducing output under those conditions would mean even less use of available labor and equipment. In other words, the farmer who could produce at lower average costs if he had a larger volume cannot afford to cut production below the prevailing level. On the other hand, if some farmers are operating at levels above their lowest average costs they can afford to reduce production as prices decline, but only to the point of their lowest average costs.

### *Illustration from Wheat Production*

Adjustments to changing costs and prices may be illustrated by taking as an example a 640-acre wheat farm in northwestern North Dakota. This is a specialized wheat area with beef or dual purpose cattle and sheep about the only alternatives to wheat. In fact, even cattle and sheep represent alternatives only as minor enterprises. On 640-acre farms the income would be drastically reduced if these were to become the major enterprises.

With wheat selling for \$1.00 per bushel and calves off the range at \$40, the comparative income available for use of the land, depreciation on buildings and for the time of the operator and his family—in other words, net return for use of the fixed resources—might be as follows;

*Income to Fixed Resources—Normal Output and Income*

Wheat major, cattle minor enterprise	\$1,400
Cattle major, wheat minor enterprise	800
	<hr/>
Income advantage of wheat as main enterprise	+\$ 600

The above comparison indicates the income advantage of the wheat and cattle combination over the cattle and wheat combination at given prices and costs; and also assuming that farmers of the area have had an opportunity to adjust themselves to that cost and price structure, and to the public costs prevailing in the area.

These income results may now be compared with another area, let us say, southwestern North Dakota, where wheat production is more risky, and where, under the same price and cost conditions, farms of 1,280 acres in size prevail, where land values are only about half as high, and where cattle have an advantage over wheat as the main enterprise. The comparison would stand about as follows:

*Comparative Income to Fixed Resources of Two Competing Areas—  
Normal Output and Income*

	Northwest North Dakota	Southwest North Dakota
Wheat and cattle	\$1,400	\$ 700
Cattle and wheat	800	1,200
	<hr/>	<hr/>
Income advantage	+\$ 600	-\$ 500

The above comparative illustration indicates that under the assumed conditions the typical northwest North Dakota farmer has an income advantage in the wheat-cattle combination, whereas the two enterprises are reversed in southwest North Dakota. The latter is also a higher risk area, and average incomes are lower.

We might reason from this illustration that farmers should move from southwest North Dakota to northwest North Dakota in sufficient numbers to equalize returns to farm families in the two areas (after correcting the income to fixed resources for differences in required investment). It would then also be said that after such movement has taken place, farmers in the two areas would be operating in line with their comparative advantage (providing other areas are also in similar adjustment) and that any other combination would result in lower net incomes to farmers of the two areas, and in a smaller national product.

Conditions are constantly changing, both within each farming

area and among areas, and it might be assumed in line with the above reasoning that if prices are permitted to fluctuate freely in response to changing supply and demand conditions, a new equilibrium would be reached. If, therefore, prices of cattle rose and wheat prices declined, it would mean shifting to more cattle and less wheat in northwest North Dakota and, perhaps, to all cattle in southwest North Dakota. But this offers no immediate solution to the problem. Once the sodland has been plowed to produce wheat in western North Dakota, it supports fewer livestock. Furthermore, once farms have been split up into smaller sizes for more intensive farming, a structure of fixed costs has been established, both on the farm itself and for the support of public institutions, that cannot be carried by a less intensive farming pattern. Farmers, therefore, will struggle desperately for a time to maintain this structure. And although it becomes impossible to meet the fixed costs in wheat farming, it is even more hopeless to do so with the less intensive cattle enterprise.

Because of the high proportion of fixed to variable costs, and because of the lack of closely alternative enterprises in these farming areas, the volume of production of wheat or of cattle will not be quickly and automatically adjusted to changing demand in response to changing prices. Maladjustments will persist over considerable periods of time, unless steps are taken to correct them.

In a severe depression when prices of all products are low, production of many products may actually increase if any return above variable costs can be obtained. Thus, if prices of both wheat and cattle declined, there would be no gain in income even if a shift to more cattle could be made quickly. Therefore, more wheat rather than less might be grown in an attempt to meet a larger share of the fixed costs.

#### *Adjustment to Lower Prices*

In order to get a better understanding of some of the income and production problems in depression as well as in prosperity, we might trace the effects of changing economic conditions on the costs and income of the northwest North Dakota wheat farm of 640 acres that was used in the previous illustration. Table 1 shows average and additional costs per bushel with a changing volume of wheat production on a farm of this size, assuming average yields of wheat of 10 bushels per acre. The term "direct costs" as used in this illustra-

tion should be interpreted as the costs directly attributable to wheat production plus the reduction in income from cattle, if any, that results from increasing the wheat acreage. It should be kept in mind that the direct costs include the reduced income from cattle. These might be shown separately, but it would make the illustration more complicated.

TABLE 1. VARIATIONS IN COSTS AND RETURNS FROM WHEAT PRODUCTION WITH CHANGES IN OUTPUT ON A 640-ACRE FARM

Bushels produced (ave. yield 10 bu. acre)	Direct cost (total)	Add. cost (total)	Add. cost (per bu.)	Ave. direct cost (per bu.)	Gross returns from wheat at \$1.00 per bu.	Net returns from wheat
<i>Bu.</i>	<i>Dol.</i>	<i>Dol.</i>	<i>Dol.</i>	<i>Dol.</i>	<i>Dol.</i>	<i>Dol.</i>
800	872	—	—	1.09	800	-72
1,000	1,000	128	.64	1.00	1,000	0
1,200	1,104	104	.52	.92	1,200	96
1,400	1,197	98	.46	.855	1,400	203
1,600	1,280	88	.41	.80	1,600	320
1,800	1,350	70	.35	.75	1,800	450
2,000	1,410	60	.30	.705	2,000	590
2,200	1,452	42	.21	.66	2,200	748
2,400	1,500	48	.24	.625	2,400	900
2,600	1,584	84	.42	.61	2,600	1,016
2,800	1,736	152	.76	.62	2,800	1,064
3,000	1,950	214	1.07	.65	3,000	1,050
3,200	2,240	290	1.45	.70	3,200	960
3,400	2,584	344	1.72	.76	3,400	816
3,600	2,988	404	2.02	.83	3,600	612
3,800	3,420	432	2.16	.90	3,800	380

At \$1.00 per bushel for wheat and \$40 for calves, about 2,800 bushels of wheat would be produced at a direct cost of \$1,736, leaving a net return from wheat of \$1,064. A net return from cattle of \$336 gives the total net income of \$1,400 shown in the previous illustration. If more wheat is produced the "additional costs" rise sharply because these include the reduction in income that would result from a smaller cattle enterprise as more land is devoted to wheat.

If wheat prices should drop to 70 cents per bushel, with costs remaining the same (which often happens), wheat production would only drop back to 2,600 bushels—the point of lowest average direct costs. This is a reduction of only 7 percent; and, even though other wheat producers made similar reductions, it is likely that too much wheat would be produced in relation to other products, and wheat prices would not be much higher. But our northwest North Dakota

wheat farmer would sell his 2,600 bushels of wheat at 70 cents, getting a gross return from wheat of \$1,820, and a net return of only \$236.

Suppose that about that time a program similar to the pre-war AAA allotment and CCC loan program is inaugurated. Wheat acreage would be cut say 30 percent—from the then prevailing 260 acres down to 180 acres. The results might be as follows:

*Returns from Wheat under Allotment and Loan Program*

Production of 1,800 bushels of wheat at 70¢	\$1,260
Price increase under a loan program, 30¢ per bu.	540
Allotment payment—2,600 bushels at 10¢ per bu.	260
Total income from wheat	\$2,060
Direct cost	1,350
Net returns from wheat	\$ 710

The return of \$710 compares very favorably with the previous low return of \$236. But it is still unsatisfactory for the wheat farmer who in past years was producing 2,800 bushels of wheat which sold for \$1.00 per bushel. If he has indebtedness which was incurred when he grew 280 acres of wheat, he still would have a very unsatisfactory income, even though the land released from wheat would produce some feed for cattle.<sup>1</sup>

As an alternative to a wheat restriction and loan program that would have these results, the possibility should be considered of finding consumption uses for the volume of wheat that represents normal production, unless the demand for wheat is permanently reduced. Both approaches should be considered as temporary or transition programs. If the demand for wheat is permanently reduced we should look forward to a thoroughgoing readjustment in the economy of wheat producing areas. Such permanent readjustment would include assistance to farmers in adjusting to a lower level of land values and increasing the size of farms so as to permit satisfactory incomes from the less intensive cattle enterprise and other possible alternatives. It also would mean reorganization of

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<sup>1</sup> Given time enough for adjustment, the eventual result of a restriction program applied to one product in an area is an expansion of alternative enterprises; but if they are less intensive, lower income enterprises they will not offset the income loss from the main enterprise. Furthermore, restriction of the main enterprise below the volume of lowest average costs creates pressure for substituting other resources for land to increase the output per acre of the product restricted at the same time that the output of alternative products is increased.



local institutions to lighten the local tax load. And some farm families might also need assistance in shifting to other areas, or into other occupations. In the areas where there are no satisfactory alternatives to wheat it is possible that assistance in increasing the size of farms and adopting improvements that result in lower costs would enable farmers to carry on in wheat production.

However, if the drop in demand for wheat is temporary, and, even as a means of tiding over the transition period to growing less wheat the possibility of additional, lower-price outlets for wheat should be explored. If a portion of the crop can be sold at prices below the \$1.00 per bushel that would be established for domestic food uses under a program devised to maintain normal prices, such outlets should be sought.

Wheat is an excellent livestock feed, and under the conditions assumed, a part of the production could be sold for feed. A combination program could be worked out that would give farmers the equivalent of "normal prices," (\$1.00 per bushel) for the wheat going into domestic food uses, and prevailing market or feed prices for any additional amount that growers wanted to raise. Perhaps the simplest way to develop such a program would be to establish a "normal production base" on which to make price adjustment payments at rates that when added to prevailing market prices would give farmers a "normal price" for "base production." The "base" could be computed in several ways. One would be to take the 1935-39 average per capita domestic food consumption of wheat and multiply it by the estimated population for the given year. The resulting product would be the national base production on which price adjustment payments would be made. Each producer would be free to grow as much wheat as he desired, but he would get price adjustment payments only on his proportionate share of base production. *No individual farm bases would be computed.*

Under such a program the wheat needed for food uses alone probably would be roughly 65 percent of the total production. Wheat from this proportion of the wheat acreage could be supported at the "normal price" of \$1.00 per bushel by means of a price adjustment payment. The wheat from the balance of any grower's acreage would bring only prevailing market prices, and all wheat would sell at market prices. On our North Dakota wheat farm the returns would be about as follows:

*Returns from Wheat under a Price Adjustment Program—Low Market Prices*

2,700 bushels wheat at 67 cents (market price)	\$1,809
Wheat adjustment payments (33 cents per bushel for 65 percent of 2,700 bu.)	579
Total returns from wheat	<hr/> \$2,388
Direct cost for 2,700 bushels wheat	1,660
Net returns from wheat	<hr/> \$ 728

The above illustration indicates that a price adjustment program might be devised which would give the North Dakota wheat farmer just as large a net income from his wheat enterprise as under the crop restriction program. The direct government payment would be larger, but more food would be produced. The land, labor and equipment on wheat farms would be more fully utilized. Wheat would sell at lower market prices which would increase consumption both for food and for feed. More feed would be available, and this would mean more food of other types. Similar price adjustments might also be needed for other products. The result would be a relatively low structure of farm prices and a high level of production, with farm incomes maintained at least as well as under direct price support and crop restriction. Retail prices of food would be much lower because some of the distributive margins are on a percentage basis. The net gain from such a program compared with production restriction would be a plentiful, low cost food supply, a well-fed population, and a larger market for farm products. Also the prevailing market prices would serve as a better guide to adjustment of acreage.<sup>2</sup>

*Adjustment to Increased Production and Higher Prices*

The above illustration of adjustment to a depression situation can be contrasted with a wartime situation which makes it necessary to produce more wheat for food uses. Suppose that our North Dakota farmer would be asked to grow about 30 percent more wheat than under normal conditions, how would it affect his cost and income situation, and how could the increase be produced at the least cost to the nation?

<sup>2</sup> The recent report of the Association of Land-Grant Colleges and Universities entitled "Postwar Agricultural Policy" has appeared since this article was submitted for publication. It suggests the direct payment method for meeting wartime commitments to farmers, and also as one of the steps in alleviating severe depression conditions.

Since farmers cannot be expected to increase wheat acreage if it means lower incomes, we need to watch the effect of increased production on direct costs. Going back to Table 1 it may be seen that 800 bushels of wheat (a little less than a 30 percent increase) added to 2,800 bushels of normal production has an additional cost of \$2.02 per bushel. It therefore would be necessary to pay about that price to get a production of 3,600 bushels on this farm. But it is not necessary to pay that much for more than the last few bushels of wheat when 3,600 bushels are produced. Of course, it is not feasible to vary the price for every few bushels that are added to output, but it seems clear that the most effective way to increase output would be to make additional payments to cover the extra costs of the increased output. The output that under normal conditions would sell for \$1.00 per bushel could still be sold at that price unless expenses of production had increased.

If this approach were used to obtain needed wartime increases, our North Dakota wheat farmer would fare as follows:

*Returns from Wheat under Wartime Price Adjustment Program—  
Increased Production*

3,600 bushels wheat at \$1.00 per bushel	\$3,600
Price adjustment payment on 800 bushels wheat at \$1.00 per bu.	800
Total returns from wheat	\$4,400
Direct cost for 3,600 bushels wheat	2,988
Net returns from wheat	\$1,412

If this approach were followed, the farmer's net income would be increased about proportionately to the increase in output.

If, on the other hand, support prices are raised to cover all of the additional cost for this volume of output, about \$2.00 per bushel would be paid for the entire 3,600 bushels, and the result would be as follows:

*Returns from Wheat under a High Support Price Program—Increased Production*

3,600 bushels wheat at \$2.00 bu.	\$7,200
Direct costs	2,988
Net returns from wheat	\$4,212

With the latter method of obtaining the increased output, the farmer's net income is increased by nearly 300 percent over his normal income. This represents a much larger increase than is needed to obtain the extra output. Furthermore, it has the disad-

vantage even to farmers of not differentiating between a payment for emergency production and the normal returns for normal output. After the war it probably will be necessary to return to the normal volume of output for many products, and if extremely high prices have been paid during the emergency, a high cost structure will have been established that it will be difficult to adjust to a normal output basis.

The above illustrations of the effect of changes in volume of output on farmers' costs and returns have been stated in terms of wheat farming—and with hypothetical yields, prices and costs; but the principles that are illustrated hold under actual conditions. As we go forward in the transition from wartime to peacetime production, the demand for many farm products is likely to be smaller than during the war period. The effect on farmers' costs and returns of reducing output will then come up for discussion, especially in view of present commitments to support prices after the end of the war emergency. Farmers should seriously consider whether, in view of the relationships between costs and volume of output, they can afford to price themselves out of any potential markets for farm products.

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## STUDENT OPERATION OF A LABORATORY FARM

A TYPICAL Corn-Belt farm of 190 acres was provided by Iowa State College in 1942 for use as a student laboratory in farm operation. At the same time a new course in farm operation, designated as Agriculture 450, was authorized. Shortly afterward a new curriculum in farm operation with the object of training farm operators was approved by the faculty of the college. The new curriculum is a regular four year course of study with emphasis on agricultural subjects in the freshman and sophomore years and on general science and arts in the junior and senior years. Agriculture 450, however, is scheduled in the junior or senior year.

The first class in Agriculture 450 with 26 students took over the management of the farm in January 1943. Enough experience has been gained with the seven classes which have completed the course to warrant this preliminary report on the project. The report is divided into three parts, first reasons for the project, second organ-

ization and operations, and third tentative principles and conclusions derived from the project to date.

### I. *Reasons*

A feeling that something was lacking in farm management laboratory methods was responsible for this new educational experiment. Some years ago an attempt was made by the author to supply this lack by bringing the student into closer contact with farmers.<sup>1</sup> Classes were divided into groups and each group was assigned to study one farm for as long as three months. During this period the students would discuss the farm organization and management problems with the farmer and make recommendations for the farmer to consider. Although this extended study of one farm plus trips to other farms provided a more comprehensive laboratory, it still was incomplete. There was no opportunity for the students to make management decisions themselves. To provide this opportunity, Iowa State College made available for the use of students a typical farm located about three miles from the campus.

Before graduating from college a student expecting to operate a farm should have a working knowledge or training in at least four fields, first the farm practices of his area, second the scientific principles of crop and animal production including the use of power and equipment, third the business principles of farming, and finally the making of management decisions. The student may have covered the first field in part before he comes to college. The second and third fields he has a good chance to cover in college but the fourth field of decisions is one in which he has at present little opportunity to obtain training while in college.

### II. *Organization and Operation*

The college administration was asked to make available a farm unit which could be used as teaching equipment, in the same category as microscopes, dairy manufacturing equipment, agricultural machinery and livestock. It was pointed out that the cost of operation should not be excessive because the students, if they followed the teachings of their instructors, should be able to make the farm pay. If they could not make the farm pay then it might be desirable to examine the instruction. The administration was also asked to

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<sup>1</sup> "How Should Farm Management Be Taught?" this JOURNAL, November 1938.

provide a revolving fund budget which could be used to finance the first year of operation; no small item as it turned out in 1943. The administration provided both the farm and the budget needed to start the project.

The only limitation imposed by the college administration is that each expenditure and sale be approved in advance by the instructor-in-charge. This limitation does not handicap the students. In fact it is an incentive because it gives the instructor an opportunity to require written reports or oral justification in support of proposed purchases and sales. In a very real sense the instructor is a combination auditor and board chairman, leaving all the initiative for action with the students.

Plans for the organization and operation of the farm were started by three students in the Fall of 1942, the first formal course in the operation of the farm began in January 1943, and the farm was turned over to the students on March 1, 1943. The first class devoted most of its time to planning the livestock and crop enterprises, to buying necessary equipment and to hiring a man to take care of the livestock.

In the beginning the students decided it would be more economical to hire their field work on a custom basis than to buy a full line of equipment at the high prices prevailing during the winter of 1943. Furthermore the College was willing to provide machinery and equipment service on a custom basis to the student farm as it did for all departments. Accordingly the students limited their purchases to a manure spreader, portable hog houses, a brooder house, and some other smaller items. They also purchased two mules, well along in years, for a relatively small sum to use for chore work. These purchases were arranged entirely by the students after considerable argument and discussion both inside and outside the classroom.

The students had charge of their own class meetings. Chairmen were selected and committees appointed to study and report on the different projects. The committee system was later discarded in favor of giving each individual a specific responsibility and assignment. The instructor attended the class meeting but did not take part in the proceedings unless he was asked. One of the students was chosen as secretary to record the actions of the class which were carried out in regular parliamentary procedure.

A good example of class procedure was the hiring of the man to

move on the farm and take care of the livestock. A committee of three students was given the responsibility of hunting prospects, interviewing them, obtaining references, and reporting back to the class. Three likely prospects were found by the committee and recommended to the class. These three prospects came to special meetings of the class and discussed the job, wages and other arrangements. After extensive deliberations, the class on the recommendation of their special committee voted to hire one of the applicants, Mr. Roy Picht. They then presented their recommendation to the instructor with references, and supporting evidence on current wage rates. The instructor found the report acceptable and recommended it to the administration for approval which was given. On March 1, 1943, Mr. Picht with his family moved on the farm to work under the supervision of the class.

Livestock projects took a great deal of the class effort in the beginning stages. What kinds of livestock and how much were questions which precipitated heated arguments in several instances. Some students wanted to specialize in hogs, others wanted diversification in hogs, dairy cows, sheep and poultry. Still others wanted to carry on cattle feeding with hogs but without dairy cows. After much discussion and a formal debate between dairying and steer feeding, the issue was finally decided in favor of hogs plus small dairy and poultry enterprises.

Another battle raged over how many hogs to raise. Early in the winter 10 gilts were purchased and bred, later 12 more were added, and finally several students decided that 5 more should be purchased. During the height of the discussion on adding this last group of 5 gilts one student obtained the floor to give the reasons why he thought the hog project was being expanded beyond the point of marginal returns. He used so effectively what he learned in his economics course taken two years earlier, that the 5 additional hogs were never purchased. As it turned out, most of the class came to the conclusion later that even 22 sows were more than could be handled profitably.

The crop plan and layout of the fields provided another series of problems. Each student was asked by the instructor to prepare a crop plan and field layout for 1943 with reasons in support of his recommendations. These were turned over to the committee in charge of the crop project. After the committee had an opportunity to study the various possibilities, and there were many of them, it

presented its recommendation to the class as a whole. Fortunately this project was started early in the winter because the class debated several weeks before it finally approved a crop plan.

One of the crop problems which created a lively discussion was the seeding of legumes. The class split almost evenly on alfalfa and red clover. Since the land had been heavily cropped with corn in preceding years, the students wanted to rotate the legumes over the farm as rapidly as possible. If alfalfa was left on a field from three to five years it was obvious that it would take a long time to get alfalfa around the farm. Those urging the alfalfa seeding, however, suggested that the alfalfa be plowed under at the end of the following year the same as the red clover. The red clover advocates insisted that the alfalfa seed would be too expensive and the risk of not getting a stand too great. The alfalfa enthusiasts claimed that the alfalfa yield would be enough larger than the red clover to overbalance these disadvantages. For a time it seemed as though an impasse was inevitable but one of the students suggested that the field of 30 acres be divided into 15 acres of alfalfa and 15 of red clover with the whole field plowed under the following year. Quick agreement was secured for this suggestion and the field was seeded in this manner in 1943. In 1944, the first and second cuttings of alfalfa yielded 34 tons and the first cutting of red clover 30 tons. The students sold 47 tons at \$19 per ton for \$900 and put 17 tons in the barn.

A crop decision made in the spring of 1944 illustrates the way the class functions. The manager of the local canning plant came to the instructor with a contract for the raising of sweet corn on a 13 acre field on the student farm. The instructor referred the manager immediately to the students who asked him to a meeting of their class at which the manager presented his contract and urged the students to sign up to raise the sweet corn. In this instance the instructor purposely absented himself from the meeting so that the students would assume major responsibility. After hearing the manager, the class appointed one student to investigate the proposition and report back with recommendations at the next class meeting. At the next meeting the student gave his report but it was not in enough detail so the class asked for a more complete statement showing estimated costs and returns for field corn and sweet corn. This was prepared and given at the following meeting. The report showed no difference in profit between the two enterprises. Since the differ-



ence between them was so small and the labor of picking the sweet corn presented more of a problem than for the field corn, the class decided against the sweet corn contract.

To provide continuity and information, records are kept on each enterprise in a project book and records of class discussions and formal actions are preserved in a minute book. For example, all the details connected with the hiring of labor are filed in a labor project book; all plans, recommendations, crop maps, yields and other pertinent crop data are filed in a crop book, and the same holds for the hog, dairy, and poultry enterprises. Each individual who prepares a report and makes a recommendation to the class has to file his report. These reports are particularly helpful to the student who takes over a project because he can find in one place all the information needed to familiarize himself with what has gone on before.

An opportunity to make mistakes is a significant feature of the farm laboratory course. An example will illustrate the effectiveness of this feature. In the first year of operation, the students proposed a new field layout which required the building of a lane fence. When the plan was approved by the class the student in charge went over it with Mr. Picht, the man at the farm. Mr. Picht pointed out that the lane was not wide enough especially where it made a right angle turn. The student insisted, however, that the width was sufficient so Mr. Picht proceeded to install the fence as directed. All went well until haying time. The first load of hay could not make the turn in the lane so the fence had to be taken down to let it through. Any loss of time, however, was more than made up by the value of the lesson to the students.

Another action taken by the students which turned out unsuccessfully was the purchase of two cows being sold out of a dairy herd. Since the students had a chance to buy the cows at the market price for beef cows they decided they couldn't lose much. After several months they found that the cows were not giving enough milk to pay for their feed. When they discovered they were losing on the cows, they sold them but in the meantime the price for beef cows had dropped bringing them \$50 less for the two cows than they had paid for them. But the loss of \$50 was a small price to pay for the experience gained not only by the students who participated but also subsequent students who will read the record of the transactions.

### III. *General Principles and Conclusions*

1. *Student decisions.* By all odds the outstanding principle in the course is that success is obtained in direct proportion as the students are given definite responsibility and allowed to make important decisions. Whenever the instructor indicates his preference, tells the students what they ought to do, or takes over any responsibility, the students lose interest. There is no half-way solution, either the farm is run by the students or by the instructor. If the instructor takes the responsibility then the students fail to get the training in making decisions.

Decision making is a great unexplored field for agricultural education. A common practice in agricultural colleges has been to give the student an opportunity to work in the barn or in the field at an hourly wage or to earn his food and lodging. But the student has been the hired hand, not the manager. Many of these students were already expert at doing farm work. What they did not know was how to plan, to give orders, to be responsible, in short to manage a farm. The fact is that students have been given four years of college training on how to farm but have had little chance to try out their management ability while getting all this information. The farm laboratory was designed to correct this defect. When the student is a freshman and sophomore he will become acquainted with the laboratory farm, through class room problems and discussions with his upper class mates who are managing the farm. Later as a junior or senior the student will have his chance to be a manager, make decisions, and test his ability against that of his class mates and former students.

2. *Non-department organization.* From the beginning the farm and the laboratory course have been directly under the Dean of Agriculture and not in any one department.<sup>2</sup> The purpose is to make the course serve all departments and to indicate that all subject matter phases have a chance for expression just as they do on a typical farm. In this setting all departments are brought together in a natural coordination. The new farm operations curriculum of

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<sup>2</sup> Dean H. H. Kildec, Dean of Agriculture, has an advisory committee to assist in the formulation of policy for the student farm. The committee at present is composed of the heads of the departments of agricultural engineering, agricultural economics, agronomy and animal husbandry. The writer served as instructor until July 1, 1944 at which time Prof. J. M. Holcomb was appointed to take charge of the new farm operations curriculum and the student laboratory farm.

which the Agriculture 450 course is a part will depend on existing subject matter departments for the courses which are included in addition to the laboratory course.

Subject matter departments are finding that the farm provides excellent problem material. The farm management department with its emphasis on farm organization, enterprise relationships, budgeting and farm records is using the farm laboratory to good advantage for a portion of its problem material but the operation of the laboratory farm is something else. There the students are on their own; if the instructor attempts to teach the students how to run the farm, he will miss the main objective because he will be robbing the students of an opportunity to make their own decisions. The farm management department can teach the students how to manage in their own courses and let the students practice what they learn in the farm laboratory.

3. *Effects on teaching.* Much of the technical training in agriculture needs to be used by students while still in college. When students learn about livestock in their animal husbandry classes they should have opportunity to buy and sell some livestock, and to determine feeding rations and feeding plans; when they have finished or are taking a crop course they should be faced with the problem of deciding on a rotation, buying the seed and giving directions to the man who is to put in the crop. The same holds for soils, horticulture, agricultural engineering and management. Two years' experience with the farm laboratory has indicated a big difference between students in their ability to put their knowledge to work. Students who had usual livestock rations memorized were not always able to cope with a new situation like that caused by the war when many ingredients were difficult to secure or unobtainable.

Students seek help from their instructors in other courses more frequently when they are taking the laboratory farm course. Whenever they run up against a problem for which they have no solution, they frequently go to their present or former instructor in the subject concerned. The instructional staff has entered into the spirit of the laboratory farm, not by treating the student managers like students, but by treating them like farmers, referring them to sources of information and taking time to discuss their problems with them at length. And the students appreciate it. Furthermore, it has a wholesome effect on the teaching. If a text book suggestion

doesn't work on the laboratory farm the instructor is likely to hear about it. On the other hand, the instructor finds his students are more interested in what he is teaching when they can use it in solving a problem on the laboratory farm. One of the most stimulating educational experiences on the laboratory farm has been the loss of hogs and dairy cattle by disease. Why did it happen? What was the disease? Could it be prevented? The students and the instructors find that the operation of a farm is usually more complicated than the text books indicate. Besides a student finds that being responsible is entirely different from being just a hired man or working for "dad."

4. *Course techniques.* Several techniques have been tested successfully in the two years' experience with the laboratory farm course. The first is giving each student specific responsibility for one project or part of the management job and not allowing him to shift his responsibility to anyone else. Usually a student has charge of a project for a month or six weeks which gives him a chance to manage several projects during the course. At first the committee system was tried but this was unsatisfactory because it was so difficult for students to get together for committee meetings. Another difficulty of the committee system was that one man, usually the chairman, did all the work. Since decisions are the substance of the course, it is essential that the decisions be clearly assigned by giving each student a specific responsibility. If a major question is involved such as choice of a method of harvesting oats, the student in charge will make his recommendation to the class as a whole for a vote. But the recommendation and carrying out the wishes of the class are the direct responsibility of the student.

A second technique is the requirement of detailed reports for each project and on each major proposition acted on by the class. Students are inclined to make hasty decisions with no written evidence available later in support of their actions. Actually one of the major duties of the instructor is to insist on adequate written reports before signing purchase requisitions for equipment, livestock and field work. Reports are used to best advantage when the student is trying to persuade the class to follow his recommendations. A well organized list of reasons or a clear cut analysis usually wins the approval of the class. The students, themselves, realize later the need for detailed written records. Oftentimes they want information on

what has happened only to find it was not recorded. Similarly in keeping their financial accounts, the students have found frequently that they do not have adequate records.

Frequent visits to the farm and availability of transportation to the farm at all times for each student is especially desirable. In order to manage, the students must visualize their problems and watch their plans as they are carried out by the man on the farm. Although it may be possible in the future for the students to live on the farm and do most of the work, this is not absolutely necessary. Several of the students have used the farm for training in such jobs as milking, castrating pigs etc., but most of the students are able to do the manual tasks. What they do not have is experience in management and in order to do this successfully they have to be able to get to the farm when they want to go.

Keeping the student in touch with the farm after he has finished the course is an important and worth-while task. In order for the student to see what has happened as a result of his decisions it is desirable to get out periodic reports on the activities and results at the farm. At the end of the first year a report was sent out to all alumni of the course giving them the high lights of the year's operations and a summary of the financial accounts which showed a profit of \$1995 after all charges including rent had been deducted. Analysis of individual enterprises, however, brought out that most of the profit had come from the crops rather than from livestock feeding.

At present, students take the course for one quarter only and receive 3 credits. It may be desirable to give them a longer contact with the farm and reduce the number of credits in any one quarter. The student should have direct contact with the farm for a year if possible. There are so many students who want to take the course that it may be necessary to obtain additional farms. If other farms are added it would be possible to get a variety of conditions through the choice of additional farms.

A high point in the course has been the "open house" at the farm. On some occasions, the students have invited their instructors and fellow students out to see what they are doing. At other times, a group of vocational agricultural instructors or farm managers visiting the campus have attended the "open house." At these events each student in the course explains what he has done with his project and answers questions raised by the visitors. An especially

lively discussion occurred at the "open house" for vocational teachers in July 1944 when several of the teachers who are alumni of the course took an active part in the proceedings along with the students.

Although the record to date indicates a bright future for this type of laboratory teaching, many phases of the project have not been developed or are still in the experimental stage. Various suggestions have been made on length of the course, participation by the students in actual farm work, a dormitory on the farm, inviting instructors from subject matter departments to class meetings at the farm and use of problems from the farm in other courses. Questions on topics like these are coming up constantly. In time the answers to these and many other questions will undoubtedly become available.

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## JOB ANALYSIS IN AGRICULTURE

PREVIOUS research in Europe, and more recently the work of the National Farm Work Simplification Project in the United States, has shown that a variation of scientific management, suited to the needs of agriculture, may produce valuable economies in the use of labor on the farm.

The introduction of scientific management in agriculture was first seriously attempted on the European continent immediately following the first World War. The dissemination of the concept of farm labor efficiency among agricultural economists, however, can be attributed largely to the work of J. J. W. Seedorf in Germany. As a result of a paper written in 1919<sup>1</sup> by Seedorf, the State of Saxony founded an experimental farm and research institute at Pommritz to develop the idea further. Other European countries were quick to borrow the idea from Germany and by 1927 the Czechoslovakian Agricultural Committee, the Finnish Agricultural Scientific Management Society, the National Institute of Industrial Psychology in Great Britain and Russian organizations were all working on the problem.

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<sup>1</sup> Seedorf, J. J. W. *Die Vervollkommnung der Landarbeit und die bessere Ausbildung der Landarbeiter unter besonderer Berücksichtigung des Taylor-Systems*, Deutsche Landbuchhandlung, Berlin, 1919.

Regarding the movement in Finland, Devinat points out: "The most characteristic feature of the development of the scientific management movement in Finland consists in its rapid spread in agricultural circles. The Finnish Society for Scientific Management in Agriculture (*Maatolouden Tyotekoseura*) established in 1925, is devoted to the study of improvements in methods of ploughing. It publishes a periodical which from the point of view of literature represents Finland's most important contribution to the scientific management movement."<sup>2</sup>

### *Emphasis of Modern Farm Management*

In recent years farm management research has concentrated its attention on such problems as organization of the farm, size of the business, the most profitable selection of enterprises, financing the farm, and the "organization and adaptation of labor, power, and equipment."<sup>3</sup> Very little attention has been given to the application of specific findings to the various farm jobs affected. Apparently research workers in farm management have not attempted to use their techniques in the field of labor management for the very reason that a refined method of analyzing farm jobs has not been available. Furthermore, many farm management research workers have been skeptical about the possible application of industrial job analysis to agriculture. It should be noted, however, that many objections have also been raised to scientific management in industry, in spite of the fact that industry has a relatively constant working environment to cope with.

### *Spadework in Agricultural Job Analysis*

Under the direction of Professor Derlitzki, the special institute established at Pommritz for the investigation of farm labor efficiency had as its primary objective: "... through critical and systematic investigations to improve the element labor in agriculture, so that with as little application of energy as need be as much and as good work as possible [may] be done, and that consequently the amount of labor used and its result stand in favorable relation to each other."<sup>4</sup>

<sup>2</sup> Devinat, P. *Scientific Management in Europe*, International Labor Office. Studies and Reports, Series B. No. 17, Geneva, p. 56.

<sup>3</sup> Young, E. C. "Farm Work Simplification Studies," this JOURNAL, vol. 26, no. 1, February, 1944, p. 232.

<sup>4</sup> International Labor Office, "The Science of Farm Labor," *International Labor Review*, vol. 15, no. 3, Geneva, p. 380.

The stimulation of interest in the field by the establishment of this institute in Germany is evidenced by the fact that the Königsberg Agricultural Central Association began studying farm labor efficiency in 1924; an experimental farm to carry on similar work at Oldenburg was organized by the Prussian government shortly afterward; and the University of Göttingen set up a similar institute for the study of farm labor in Brunswick. A monthly periodical called *Die Landarbeit* has also been published since 1924 dealing exclusively with the findings of research workers in the field and the application of their findings to German agriculture.<sup>5</sup>

The movement in Germany has been pursued along lines different from the development of scientific management in industry. At the outset it was realized that the "science of farm labor" could not develop independently of the psychological and the physiological sciences. "Dr. Steding was the first to describe systematically the importance of the possibilities of applying psychotechnical methods to the improvement of farm work."<sup>6</sup>

It is quite natural that Germany should take the lead in applying Taylor's methods of scientific management to agriculture, and that European countries as a whole should attempt to apply these techniques to farming. Farm accounts published in Germany, Sweden, Switzerland and Denmark, for example, have shown labor costs to be in excess of 40 percent of all production costs. Furthermore, the possibility of obtaining spectacular results by using farm job analysis is enhanced when applied to large-scale farms, a situation characteristic of German farming.

In Great Britain, interest in farm labor efficiency seems to have taken a different form. Early research in the field was initially undertaken by industrial psychologists. W. R. Dunlop was the first to investigate the possibilities of analyzing farm jobs with a view to their improvement. He began working on farm job analysis during the summer of 1926, under the supervision of the National Institute of Industrial Psychology. Dunlop found the lack of education among agricultural workers and the belief held by most farmers that weather and prices were the sole factors determining their economic progress too deeply rooted to pursue his studies further. Consequently, after several years of research in the field, he decided that the widespread acceptance of the "farm job analysis idea"

<sup>5</sup> Ibid., p. 380 ff.

Ibid., p. 380.



would have to wait until people engaged in agriculture were educated further and became more receptive to new ideas. Several problems raised by Dunlop are worth noting, however. He found, for example, that many farmers avoided job analysis because they were afraid of "upsetting" their employees. Furthermore, the conditions of agriculture—the workers' physical environment including the soil and plant and animal life—are difficult to control by man. Many farm tasks are short lived and seasonal in application, subject continually to the vagaries of weather. Consequently, thorough investigations and the testing of new methods are impossible in any one year.<sup>7</sup>

Work of minor importance has been done by Vernon and Bedford, who studied the frequency and duration of voluntary rest pauses occurring in certain agricultural operations.<sup>8</sup> Balchin, in a similar study, conducted several time experiments on hoeing.<sup>9</sup> In spite of these contributions further research in Great Britain has not been forthcoming.

Now that a large body of literature exists concerning the findings of many research workers, several observations can be made. It should be noted, however, that many of the findings cannot be generalized—they must be qualified by the particular set of circumstances surrounding the observations made. It is for further verification and guidance that the following studies and observations have value.

1. At Pommritz, by consolidating and reorganizing the layout of many fields, a reduction of 40 fields to 15 fields was accomplished. On a single irregular field, which had been made rectangular, ploughing required 24 percent less labor; cultivating, 19 percent less labor; harrowing, 38 percent less labor; drilling, 40 percent less labor; and hoeing, 38 percent less labor.

2. By teaching a fairly efficient worker better methods of gathering up and binding straw, the time required for her to perform the task was reduced from 40 to 30 seconds. In the field of motion study, however, the men at Pommritz make the following caution: "... even the advocates of Taylorism admit that the possibility of suc-

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<sup>7</sup> Dunlop, W. R. "Industrial Psychology and Agriculture" in *Industrial Psychology* by C. S. Myers, Henry Holt and Co., New York, 1929, p. 231.

<sup>8</sup> Vernon and Bedford, "Rest Pauses in Heavy and Moderately Heavy Industrial Work," *Industrial Fatigue Research Board Report 41*, London, 1927, p. 8-9.

<sup>9</sup> Balchin, N. "Time Experiments on Hoeing," *The Human Factor*, Oxford University Press, London, vol. 6, Jan. 1932, p. 12.

cessful motion studies is far more limited in agriculture than in industry. In the first place, nearly all work dealing with animals, and a good deal of work dealing with the care of plants, must be excluded. In the second place, the variation of conditions—weather, season, soil, quantity and quality of crops—is much greater and more disconcerting in agriculture than in industry. On the other hand, and this is an important consideration, it may often be possible to apply results obtained in industry almost directly to agriculture; shovel work for example, seems to be the same in both.”<sup>10</sup>

3. A comparison of various tools or methods of procedure should be made in terms of output per unit of input (productivity per unit of time) or input per unit of output (time required per unit of output) before evaluating a given process.

4. Time studies may also provide a rough index of the “optimum” time required to perform a given task and the most desirable distribution of work and rest combinations. Such data may prove invaluable to authorities attempting to deal with the problem of supplying the necessary labor during seasonal peaks, for example.

5. Time and motion studies, although concerned primarily with the maximization of output during the short run should also consider the maximum use of the human resource over the long run, i.e. the life of the individual worker. Consequently, the greatest possible output with the use of a minimum amount of energy (rather than a minimum amount of time) must be looked for and this can only be done through fatigue studies.

Atzel of the Kaiser Wilhelm Institute for Physiological Studies in Berlin makes the following suggestions:

- “a) the strong muscle groups should be used for heavy work; the weak groups, for easy work;
- b) all static work, e.g. keeping a burden still at arm’s length, must be avoided as far as possible;
- c) loads must be carried so that their centre of gravity is vertically above the supporting plane base of the body.”<sup>11</sup>

6. Psychological factors may influence productivity as much as any other causal agent. Wage rates, self respect, pleasant working conditions and certain instinctive factors may all bear on the workers’ rate of production. Lüders points out, for example, that a worker may often increase his speed by simply knowing what his “normal output” should be. He therefore suggests that the task of the worker and his expected output be specified.<sup>12</sup> Ries, on the other

<sup>10</sup> “Science of Farm Labor,” *op. cit.*, p. 389.

<sup>11</sup> *Ibid.*, p. 393.

<sup>12</sup> *Ibid.*, p. 401.

hand, feels that telling a worker what his task is supposed to be is not enough, since an endless or seemingly endless task may prove to be very depressing to a worker. He therefore recommends that tasks should be fixed for shorter time intervals, thereby preventing work from rolling on uniformly and endlessly.<sup>13</sup>

7. The use of aptitude tests and other techniques of vocational guidance in agriculture are important corollaries of efficient labor use. Erismann has compiled a list of 122 physical and mental qualifications necessary for such jobs as farming on small, medium, and large enterprises, grape farming, stockbreeding, shepherding and cattle raising in Germany. He found the variation in qualifications not differing markedly from those found in industry.<sup>14</sup>

### *Limitations of Scientific Management in Farming*

More recently, investigators in the United States have attempted to apply "wholesale" the industrial techniques of job analysis and time and motion study to agriculture. The peculiar characteristics of agriculture have already been noted, but what is needed even more than the utilization of industrial techniques, is the scientific demonstration of the limitations involved in making these applications to farming. To make the best use of future research efforts such a body of principles would prove indispensable.

At the outset, the limitations of job analysis in industry should be surveyed. It is not the purpose of this paper to evaluate the detailed methodology used in time and motion study. A very important factor, however, can be mentioned. As Vernon has pointed out, many efficiency experts still cling to obsolete methods.

"It is necessary . . . to bear in mind that though time and motion studies which lead to increased productivity are perfectly legitimate, it is possible to press them too far, and by undue speeding up induce an undue and unjustifiable state of fatigue in the workers."<sup>15</sup>

Although the industrial engineer is prone to deny this charge, the fact that these conditions have existed in many plants and still exist is borne out by the following statement made by R. J. Thomas, President of the United Automobile Workers (C.I.O.) before the T.N.E.C.:

<sup>13</sup> Ibid., p. 401.

<sup>14</sup> Ibid., p. 408.

<sup>15</sup> Vernon, H. M. "Fatigue in Industry," *The Human Factor*, Oxford University Press, London, vol. 11, no. 1, January 1937, p. 3.

"... before the depression even began automobile production was carried on with every scientific method for squeezing a maximum quantity of work per hour from the individual worker. Jobs were broken down and timed to the fraction of a second. Men were offered bonuses to exceed the production on the rates established by time study men. When these levels had been surpassed the new attainments were accepted as normal, and intense pressure was applied for higher and higher records of output. With the coming of the depression the universal testimony of the auto workers is that speed-up increased beyond the powers of human endurance."<sup>16</sup>

Recognizing the many factors influencing the productivity of workers, a concept of ideal human efficiency would be desirable. One possible "ideal" would be to maximize production during a given time interval, holding energy expenditure and the dissatisfaction of the work constant at the lowest possible level.

Specifically, the following measures may be taken to approach this ideal:

1. To maximize output during a given time interval:
  - a) Improving the method of doing jobs by planning work routine.
  - b) Eliminating useless movement by improving the layout of the enterprise; preventing unnecessary stoppages or delays; good routing and transport of commodities produced or in process of production; organizing the arrangement and storage of tools and equipment; analyzing the fundamental elements of a particular task and applying improved methods.
  - c) Increasing the productivity of productive time by training and instructing new workers for the job; regulating and applying wisely human energy through the use of motion analysis; repairing tools and appliances before starting on a job; devising and adopting mechanical aids and substitutes.
  - d) Using an incentive wage system.
2. To minimize energy expenditure and dissatisfaction of the worker:
  - a) Shortening the work day.
  - b) Introducing rest pauses.
  - c) Using proper illumination.
  - d) Installing ventilating systems in buildings.

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<sup>16</sup> Temporary National Economic Committee Report Part 30, Government Printing Office, Washington, D. C., 1940, p. 16371.

- e) Wearing the proper clothes for the job.
- f) Increasing the workers' interest in the tasks performed.
- g) Instituting good management-labor relations.
- h) Utilizing a system of vocational guidance and selection.
- i) Decreasing miscellaneous fatigue-producing factors such as noise, vibration, etc.

The importance of finding the optimum combination of the above factors has been neglected, to some extent, by efficiency engineers. In many cases either the maximization of output during a given time interval or a half-hearted attempt to minimize energy expenditure attracted the attention of experts dealing with these problems. The question of how much a worker could be "speeded up" before he became irritated or fatigued was hardly recognized. It has been only recently that investigators in the field have begun to realize the equal importance of both types of influences on productivity.

In agriculture the problems are even more complex since the forces enumerated above, as well as the peculiar functions of the entrepreneur-laborer (the individual farmer), need to be considered. Furthermore, remedies capable of being applied to industry cannot always be applied to farming or must be adjusted to satisfy the requirements of agriculture.

Although certain of the techniques which are used so effectively in industry to maximize output during a given time interval can be applied to farming, variations in weather, influences of animal and plant disease and pestilence, soil differences, crop rotations, tenure restrictions, and seasonality of production seriously limit the use to which these techniques can be put. Of even greater importance, however, is the fact that the measures necessary to reduce energy expenditure and worker dissatisfaction are even more difficult to apply. The work day in agriculture, for example, cannot be conveniently shortened, especially during emergency periods such as planting or harvesting time. The introduction of rest pauses cannot be applied to all farm situations. Commercial vegetable farming, cotton picking, and fruit harvesting, where large numbers of seasonal labor, working with their hands on fairly uniform, time consuming jobs, are employed can undoubtedly use rest pauses to good advantage. But in other farm areas where many different chores are performed each day, rest periods may have little value. Operations such as hand hoeing, shoveling or detasseling corn, and even operating the tractor may also benefit by the introduction of suitable

periods of rest for the worker involved. Recent legislation in Argentina concerning minimum wages and working conditions for agricultural workers further emphasize the importance national governments are attaching to the various considerations mentioned above. The new law states: "Forty minutes shall be allowed at eight o'clock for breakfast; an hour and a half at noon for lunch, and thirty minutes at four o'clock for afternoon refreshment," during which time coffee must be provided for all employees.<sup>17</sup>

Finally, the problem of age distribution of workers is an important consideration in farming. Time and motion studies in industry have been effective, in part, because older workers and slower workers have been displaced or shifted to other jobs. Farming presents an entirely different problem; self employed older men or slower workers are not displaced.

As the National Resources Committee has pointed out: "... the great bulk of employed persons in the very young and very old age brackets are to be found in agriculture rather than in manufacturing and mining."<sup>18</sup> Almost  $\frac{1}{2}$  of all the gainfully employed persons in agriculture are either under 20 years of age or over 60, while in industry 16 percent of the total employed labor force are in this group.

Obviously, to attempt to establish performance goals by time and motion study for a particular task, not considering this variation in the labor force, is to ignore a basic distinction between rural and urban workers. Where the urban laboring population, although distributed in a somewhat similar manner by age groups, is self adjusting through the employment practices of industrial firms, the farm laboring population is not. Older workers and younger workers in agriculture continue to perform the same tasks as the more efficient farm laborers, differing only in rate and quality of performance.

Summarizing briefly the findings of the various European research workers in the field of farm job analysis, it may be said that "process analysis" or the arrangement and routing of farm jobs offers many possible economies of labor use in agriculture.

Before applying any new method, layout, or piece of equipment

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<sup>17</sup> U. S. Dept. of Labor, "Minimum Wages and Working Conditions in Argentina, 1943," *Monthly Labor Review*, vol. 58, no. 4, p. 859.

<sup>18</sup> National Resources Committee, *The Structure of the American Economy*, Part 1, U. S. Govt. Printing Office, Washington, D. C., June 1939, p. 31.

to a process, the investigator should be able to determine the following information before evaluating the advantages of the new procedure over the old:

- a) What it will cost in terms of time, money and physical exertion to employ or develop the new procedure.
- b) How much the new procedure will save in terms of time, money and physical exertion.
- c) How long the installation of the new method will take to pay for itself.
- d) The additional training involved in introducing the new procedure, where many hired laborers are employed.
- e) The additional cost of supervision, if any.
- f) The effect the new method has on labor turnover.
- g) The influence of new work routines on management-labor relations and the determination of wage rates.

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### RELATIONSHIP OF INCOME TO MILK CONSUMPTION\*

THE purpose of this paper is to investigate the income elasticity of the demand for fluid milk on the basis of empirical observation and to examine the findings in the light of their implications upon post-war food distribution problems.

Between 1939 and 1943 national income payments increased over 100 percent, with consumer purchasing power reaching an all-time high. During this five-year period, with unrestricted supplies of milk and controlled consumer prices, total fluid milk consumption in the United States increased 19 percent. This would suggest that the income-demand curve for fluid milk is relatively inelastic.

This inference does not seem to be in accord with the observations made in the "Consumer Purchase Study" conducted by the Bureau of Home Economics, which brought out clearly that fluid milk consumption varies directly with family income.<sup>1</sup> Since the B.H.E. study was based on subjective estimates of consumption and income, it has been felt that the validity of the findings should be established in terms of objective observations.

\* This paper is a personal contribution of the authors and does not necessarily present the views of the War Food Administration.

<sup>1</sup> Stiebeling, H. K., et al., "Family Food Consumption and Dietary Levels," Miscellaneous Publication 462, U. S. Department of Agriculture, 1941.

This article analyzes data obtained in three surveys conducted at the College of Agriculture of the University of Wisconsin and School of Business Administration, University of Chicago. The surveys provided, among other data, information on actual milk purchases and family income.<sup>2</sup>

### *Procedure*

The original data were compiled in Madison, Racine and Kenosha, Wisconsin, and South Bend and Mishawaka, Indiana, between October 1940 and May 1942. Over 2,000 families were interviewed to provide the information which was called for in the questionnaire.

In the interviews questions were asked as to the number of people in the household, their age, and from whom they bought milk. The questionnaires obtained from those families who purchased all their milk from dairies only<sup>3</sup> and members of which had all meals at home regularly, were classified as usable questionnaires.

After the interviews were completed the dairies were asked to report from each family record in the route book the total amount of milk purchased during a consecutive two-month period.<sup>4</sup> In the three markets consumption records were provided by twenty-seven dairies.

Data on incomes of the families interviewed were secured from individual income tax records on file in the State Assessor's Office and from the Retail Credit Bureaus.

The surveys in these three markets were based on milk purchases in either two fall or two spring months. In Madison, purchase records were obtained for October-November 1940; in Racine-Kenosha, records were obtained for October-November 1941, and in South Bend-Mishawaka, for April-May 1942. Supplementary tests conducted in Madison have shown that the fluid milk consumption of the families was essentially the same the year around as it was in October-November.

<sup>2</sup> The authors are indebted to the Department of Agricultural Economics, University of Wisconsin, and the Department of Marketing, University of Chicago, for making the original data available for this analysis.

<sup>3</sup> At the time of the surveys there was no differential between the price of milk delivered at homes and that sold at stores, and the dairies in the Wisconsin markets provided a special delivery service to patrons for no additional charge.

<sup>4</sup> For purposes of this analysis total fluid milk consumption refers to the consumption of pasteurized whole milk and special milk, i.e., homogenized, irradiated, chocolate, and soft curd milks. Skim milk purchases were not included in the total. Purchases of milk by families were construed to be synonymous with the amount consumed. Purchases of evaporated or condensed milk and of cream (milk equivalent) were not included in this total.



*Results and Conclusions*

Complete consumption and income records were obtained for 601 families in these three markets.<sup>5</sup>

The income and milk consumption per household were correlated for the families in each of the three markets and for the families in all the markets together. The coefficients of correlation are shown in Table 1.

TABLE 1. RELATIONSHIP BETWEEN INCOME AND MILK CONSUMPTION PER HOUSEHOLD, 1940-42

Market	Number of families	Coefficient of correlation (r)
Madison	173	.2538
Racine	285	.1376
South Bend-Mishawaka	143	.0578
	601	.1991

Further analyses were made to determine whether the size of the family might have distorted the relationship between income and fluid milk consumption.<sup>6</sup> The consumption per household was calculated on a per capita basis and related to the family income. Correlations (Table 2) were made between the income and per capita milk consumption for the families in each of the three markets, and for the three markets together.

TABLE 2. RELATIONSHIP BETWEEN INCOME AND PER CAPITA MILK CONSUMPTION, 1940-42

Market	Number of families	Coefficient of correlation (r)
Madison	173	.0860
Racine	285	.1474
South Bend-Mishawaka	143	.0028
	601	.0821

In addition, correlations were made between per capita income and per capita consumption per family. However, these too failed to establish a degree of association between the two variables. Therefore, it was concluded that there was no statistically signifi-

<sup>5</sup> An analysis of variance indicated that the difference between the average milk consumption in the three markets was not significant statistically.

<sup>6</sup> The size of the family in this survey was not found to vary with income.

cant relationship between the per capita milk consumption and the individual family income.

The degree of correlation between the number of children in the family expressed as percent of all members of the family and per capita milk consumption was also determined. These correlations too failed to indicate a statistically significant relationship between the number of children and per capita consumption.

To determine the relationship between per capita milk consumption and (1) per capita income, and (2) number of children in the family, a multiple correlation was made. The coefficient of multiple correlation ( $R$ ) was found to be .15.

On the basis of these investigations it was concluded that the data for the sample studied do not indicate any statistical evidence to explain the variation in per capita milk consumption of individual families.

This conclusion is at variance with that reached in many investigations which show a significant positive relationship between the average milk consumption and the income group.<sup>7</sup> Perhaps the lack of agreement in conclusions may be due, in part, to the manner in which the data on milk consumption were obtained. A recent study has shown that as family income increases the degree of exaggeration of reported milk consumption increases. The reports of families in high income groups were found to overstate milk consumption considerably more than those of families in the low income group.<sup>8</sup> Consequently, any study based on consumers' subjective reports of their takings may be expected to show that milk consumption increases with income because of the bias introduced in reporting.

Such a bias in the accuracy of consumer reports is, no doubt, operative in many subjective consumption studies. As a result, perhaps the prevailing notions on the relationship between income and food consumption, many of which are based on subjective reports, are erroneous.

The interpretation of the data obtained in this study in the light of the inference of income-consumption elasticity upon price-consumption elasticity<sup>9</sup> suggests that in the range of observations the

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<sup>7</sup> Cf. Stiebeling, H. K. Ibid.

<sup>8</sup> Hadary, Gideon. "Effect of Method of Distribution on Milk Consumption and the Implications of the Findings on the Reliability of Consumer Response," *The Journal of Marketing* (to be published).

<sup>9</sup> Marschak, J. "Money Illusion and Demand Analysis," *Review of Economic Statistics*, Vol. 25, No. 1, February 1943, pp. 40-48, discusses the relationship between income elasticity and price elasticity comprehensively.

aggregate price-demand curve for milk is relatively inelastic in the short run.

Families with very low incomes do not seem to drink fresh milk regularly. Data for such families were not obtained in this study, since a record of milk purchases was a prerequisite to interviewing the family.<sup>10</sup>

The "breaking point" between families purchasing and those not purchasing milk regularly could not be determined from the data at hand. However, there are grounds for believing that this "breaking point" could be found around the \$1,000 income level. As the incomes of the families not regularly consuming milk rises to this level regular milk consumption is presumed to ensue. Thus, it is *only* at a "demand-excitation" level of earnings that the income-demand curve for fluid milk is relatively elastic.

Since most urban families have incomes which have been observed to be associated with regular milk consumption, the increase in incomes which occurred during the war could not be expected to be associated with a corresponding increase in milk consumption. While national income payments doubled between 1939 and 1943, total fluid milk consumption in the United States increased 19 percent. Apparently, the average per capita fluid milk consumption of families having an income above the "breaking point" changed little, even though their earnings increased considerably during this period. The observed increase in fluid milk consumption in cities and villages appears to be more closely associated with the changes in the number of wage earners. As the number of those gainfully employed increases, the number of the families having incomes above the "breaking point" increases, resulting in rising fluid milk consumption. In fact, the association of the changes in factory employment with fluid milk consumption has been strikingly close; in the five-year period of 1939-43 the index of non-agricultural employment rose 28.5 percent, while fluid milk consumption in cities and villages rose 28 percent.

On the basis of the above, it appears that fluid milk consumption

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<sup>10</sup> Although this study is based on data obtained late in 1940 in Madison, in 1941 in Racine-Kenosha, and early in 1942 in South Bend-Mishawaka, no difference attributable to the change in the national income was noted in the average per capita milk consumption of the families in the three markets. This is due to the fact that the surveys did not study the average per capita consumption in the three markets, but rather the average per capita consumption of a sample of milk-consuming families in the three markets.

in cities and villages seems to vary more directly with the changes in factory employment than with the changes in factory payrolls. As the number of gainfully employed increases, total fluid milk consumption rises with the number of milk consumers. Conversely, as factory employment shrinks and the number of wage earners decreases, total fluid milk consumption declines with the number of milk consumers. These changes in the number of milk consumers are associated with little or no changes in the average per capita consumption of the families which continue to drink milk, even though their incomes may be subject to marked fluctuations.

A change in fluid milk prices in the range ordinarily occurring in fluid milk markets—one or two cents per quart—only affects the takings of the marginal consumer whose income is at the demand-excitation level. Since a relatively small proportion of the consumers in any market might be classified as strictly “marginal” (excluding those having incomes below the “breaking point”) at a given time, changes in retail prices as witnessed in city markets, fail to effect changes in milk consumption in the short run.

### *Post-War Implications*

The volume of employment in the United States has reached levels that cannot be expected to be maintained under peace conditions. It, therefore, appears that fluid milk consumption has reached a maximum *insofar as the effect of employment on consumption is concerned*. Increases in milk consumption beyond this level as advocated by nutritionists could be effected only by means of educational and promotional efforts. A decline in milk consumption might be expected to take place in the post-war period as the total number of gainfully employed decreases from its present super-high levels.

Concerted efforts at sustaining milk consumption represent a real challenge to our agricultural economists. Programs designed to counteract the undesirable effects of a diminution in employment and income on fluid milk consumption by general “roll-backs” in retail prices will be ineffective in meeting the declining demand anticipated in the post-war period. Further, in view of the relatively inelastic demand curve of fluid milk for families in the higher income strata and an elastic demand curve being limited to a relatively small proportion of the low-income families only (those at the “demand-excitation levels”), it seems that a two-price sys-

tem, such as, in effect, a food stamp plan provides, could not be expected to be very effective in sustaining total fluid milk consumption at the war-expanded levels.

If milk production in the post-war period continues at present levels, our domestic economy will be called upon not only to maintain fluid milk consumption at the wartime peak, but also to absorb the milk equivalents that had been shipped to our Allies. In 1943, Lend-Lease purchases alone accounted for 5 percent of our total milk production sold off farms. The eventual cessation of these purchases will give rise to problems of readjustment which, due to the characteristic rigidities of dairy production, will have to be dealt with at the marketing phase rather than the production stage.

In dealing with problems of post-war readjustments in the dairy industry, agricultural economists and nutritionists are prone to place too much emphasis on consumption of milk in the fluid form. If these adjustments are to be brought about through programs designed to expand consumption rather than to limit production, the fact that 60 percent of all the milk sold from farms goes into manufactured dairy products having a relatively high degree of elasticity of demand must be exploited.

As has been shown, fluid milk consumption, at best, may be maintained near peak levels established under wartime conditions of an all-time high record of employment and consumer purchasing power. The problem of retaining our greatly enlarged dairy herd in the post-war period for the benefit of our own population must be attacked in the direction of expanding the consumption of manufactured dairy products for which a relatively high degree of elasticity of demand is presumed to exist.

R. E. PATZIG  
GIDEON HADARY

*War Food Administration*

## THE RELATIONSHIP OF CHOCOLATE MILK TO TOTAL FLUID MILK CONSUMPTION<sup>1</sup>

CHOCOLATE milk consumption in the United States in 1942 was estimated at 96 million gallons, or about 2.2 percent of the total fluid milk consumption in cities and villages. The purpose of the study on which this summary is based is to investigate whether

<sup>1</sup> This report has been adopted from a doctorate thesis developed in the Department of Agricultural Economics, University of Wisconsin.

total fluid milk consumption has been affected by chocolate milk and, if so, to what degree.

With this question in mind, various experiments and surveys were designed which covered household units,<sup>2</sup> school students,<sup>3</sup> and factory workers.<sup>4</sup> The basic technique adopted in all these experiments was to compare the average per capita fluid milk consumption when plain milk only was consumed with the average per capita consumption when both chocolate and non-chocolate milk were consumed.

Since defatted or partially skimmed milk is generally used in the manufacture of chocolate milk, an appraisal of the economic significance of chocolate milk is based on the following criteria:

- (1) Fluid volume sales—This is of primary interest to the milk distributors since the volume of sales is an important factor influencing their income.
- (2) Butterfat consumption—This is of major interest to producers since it is a common practice in the great majority of urban markets to price milk on the basis of the butter quotations and on the fat content of the milk.
- (3) Solids-not-fat utilization—This is becoming of increasing interest to producers as urban markets take cognizance of the volume of non-fat milk solids in pricing milk.

This study shows that, on the average, of the fluid volume represented by a quart of chocolate milk, 67.5 percent was a replacement of whole milk, 7 percent was flavor, and the remaining 25.5 percent represented an increase in the volume of fluid sales. As far as the distributor alone is concerned the volume represented by flavoring also constitutes an additional sale. On this basis the 96 million gal-

<sup>2</sup> Gideon Hadary. "The Relationship between Chocolate Milk and Total Fluid Milk Consumption of Urban Families." *Journal of Business*, University of Chicago, April 1943.

Marvin A. Schaars and Gideon Hadary. "Chocolate Milk Drinkers Drink More Milk." *Milk Plant Monthly*, August 1942.

<sup>3</sup> Marvin A. Schaars and Gideon Hadary. "The Influence of Chocolate Milk Consumption on Total Fluid Milk Consumption of Students." *Milk Dealer*, December 1942.

<sup>4</sup> George H. Brown and Gideon Hadary. "Beverage Preference of Industrial Workers: A Study in Consumer Preference Ratings." *Journal of Business*, University of Chicago, April 1944. Gideon Hadary. "The Relation of Chocolate Milk to Total Fluid Milk Consumption of Factory Workers." *Journal of Business*, University of Chicago, January 1943.

lons, or 826 million pounds, of chocolate milk consumed in fluid form in the United States in 1942 represented:

- (a) 57,792,000 pounds of chocolate flavor;
- (b) 557,280,000 pounds substitute or replacement of whole milk;
- (c) 210,528,000 pounds increased fluid sales.

The 96 million gallons of chocolate milk contained approximately 14,588,000 pounds of butterfat, or 1.02 percent of the total butterfat consumption in the fluid form in the urban communities of the country in 1942 as compared with 21,176,000 pounds of butterfat in the whole milk which the chocolate milk replaced. Therefore, the consumption of chocolate milk was associated with a decrease of 6,588,000 pounds of butterfat consumed in fluid form. These figures for butterfat utilization are based upon an average butterfat content of 3.8 percent in the whole milk and 1.9 percent butterfat in the chocolate milk after allowing for the chocolate flavoring. There was, of course, considerable range in the fat content of whole milk and even a wider range in the butterfat content of chocolate milk.

The sale of chocolate milk resulted in expansion in the total amount of milk solids-not-fat consumed in fluid form. The 96 million gallons of chocolate milk contained 62,332,000 pounds of milk solids-not-fat, or 1.93 percent of the total solids-not-fat consumption in the fluid form in the urban communities of the country in 1942. Of this amount 44,505,000 pounds were replacements of solids-not-fat in whole milk sales. The remaining 17,827,000 pounds represented an increase in the total volume of these milk solids consumed in fluid form.

1. The average quart of chocolate milk consumed represents, on a volume basis:

- (a) .151 pound, or 7 percent, of chocolate flavoring;
- (b) 1.450 pounds, or 67.5 percent, replacement of whole milk sales;
- (c) .549 pound, or 25.5 percent, of additional fluid sales.

2. The average quart of chocolate milk sold contains .0380 pound of butterfat, as compared with .0551 pound in the volume of whole milk replaced. Each quart of chocolate milk sold represents a decrease of .0171 pound of butterfat sales in fluid form. This is 45.0 percent of the butterfat in a quart of chocolate milk, or 21.0 percent of the butterfat in the whole milk replaced by the chocolate milk.

3. The average quart of chocolate milk sold contains .175 pound of milk solids-not-fat. Of this amount, .125 pound, or 71.4 percent, represents the solids-not-fat in the volume of whole milk replaced, and .050 pound, or 28.6 percent, represents additional sales in fluid form.

In summary, the consumption of chocolate milk is ordinarily associated with an increase in volume of fluid sales, an increase in the sale of milk solids-not-fat, and a decrease in the sale of butterfat consumed in fluid form. If there is to be no decrease in consumption of milk fat in fluid form, all other things being the same, the average butterfat content of chocolate milk must be about 2.75 percent when the average butterfat content of the whole milk is 3.8 percent. Variations in volume relationships will, of course, change this percentage somewhat for school sales, factory sales and home delivery sales.

GIDEON HADARY

*War Food Administration*



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- Timoshenko, V. P., *World Wheat Production*. Stanford University: Food Research Institute, 1944. Pp. 148. \$3.00.
- Williams, John H., *Postwar Monetary Plans*. New York: Alfred A. Knopf, 1944. Pp. 297. \$2.50.

## REVIEWS

*Food for Postwar Europe: How Much and What?* M. K. Bennett. Stanford University, California: Food Research Institute. War-Peace Pamphlets No. 5, March 1944. 100 pp. \$.50.

*Livestock in Continental Europe, During World War II*, Helen C. Farnsworth. Stanford University, California: Food Research Institute. War-Peace Pamphlets No. 6, September 1944. 63 pp. \$.50.

The first of these two pamphlets "is designed to serve two purposes. One is to face as squarely as possible the question: How much food and feed, and what, will be "required" to be shipped into Greater Europe from overseas sources of supply in the year following the cessation of hostilities in Europe? The other is to provide a factual background for discussion of this question, first by picturing the food situation of Greater Europe as it was before the war, . . . and second by tracing the changes that have occurred in the food situation of the area under the impact of war, . . .

As the author suggests, the part of the pamphlet which will have the more enduring value seems likely to be the historical analysis of the food situation in Greater Europe before and during the war rather than the forward analysis. Yet even a very imperfect analysis of the magnitude and character of the immediate postwar task of feeding the European peoples may be of greater value now than more enduring perfection. To this compelling transitional problem, this pamphlet makes a very definite contribution.

In brief scope the over-all picture presented is about as follows: Prewar overseas imports of food and feed into Greater Europe (including Russia and the British Isles) were about 40 million metric tons—about 20 million of food and 20 million of feed. By 1943 this had shrunk to not more than 14 million tons—a decline of about two-thirds, although most of this remaining quantity was food. For the first post-war year the conclusion is that a total of 34–39 million metric tons will be imported. This figure is divided roughly as follows: British Isles, 14–16 million tons; Soviet Union, 5 million tons; Continental Europe, 15–18 million tons. The total will contain more food and less feed than was true in prewar years.

This estimate is lower than some made by those who have been impressed with the extreme food shortages that have appeared in most distressed areas. It is also higher than several of the more con-

servative estimates. The author reckons that the import figure is likely to lie between the present wartime volume of about 14 million tons and a high of 50 million tons, the latter because prospective export supplies will preclude more. The actual imports must depend on the needs, the preferential status, and the purchasing power of the importing countries. These factors are carefully examined in turn for each area in Europe before arriving at the final total.

The second pamphlet (No. 6 in the series) by Helen C. Farnsworth is an excellent summary of what is known of the course of livestock production in Continental Europe during the war. It supplements and extends the broader and more general analysis contained in the preceding pamphlet by M. K. Bennett. The first sentence in her summary says: "Through the fifth year of World War II the livestock position of Continental Europe ex USSR has deteriorated significantly less than it did in 1914-18." Sharp reductions occurred only in hogs and poultry, which can be restored fairly rapidly when feed is available.

A "considered guess" is hazarded that total production of meat on the Continent ex USSR in 1943-44 was something like three-fourths of the average of the last 5 prewar years. Milk production was reduced less, to a level of perhaps 85 percent of prewar.

Because livestock numbers have been maintained as well as they have is a strong reason for including feed as well as food in the early postwar shipments to Europe. Additional feed to supplement what is already available may help greatly to build up the European production of animal fats and make it possible to reduce overseas shipments of such expensive foods as meat, eggs, and dairy products.

The situation country by country is developed in considerable detail to bring out the important fact that the over-all averages cover up some of the most significant changes which have occurred. The great shift toward direct food crops and away from the indirect livestock food products has gone much further in some areas than in others.

From the material in these two pamphlets it may be concluded that the most serious over-all food problem in the first year after VE-day will be one of internal transportation and distribution—of getting the available food to the places and people who need it. Continental production has remained at a comparatively high level and import supplies in general are likely to be available in at least fairly adequate quantities. But the physical, economic and

political machinery for internal communication and distribution may lack the organization required to do the most effective job. For this reason the food situation in Europe is likely to continue darker in many areas than the over-all conclusions of the authors might at first lead one to believe. This may mean further that apparently sufficient food supplies may be insufficient when realistic account is taken of all the inevitable dislocations of the times.

RONALD L. MIGHELL

*Bureau of Agricultural Economics*

*The Agriculture of Wales*, A. W. Ashby and I. L. Evans. Cardiff: University of Wales Press, 1944. Pp. 300. 15s.

This book is a survey of the main features of Welsh agriculture. It is so arranged as to be of interest both to the general student and to one who wishes considerable statistical detail. The first chapter contains a brief and very readable discussion of the characteristics of Welsh agriculture, concluding with the following paragraph:

"Agriculture is relatively more important in Wales than in England. Rural social organization is based upon the small family farm where farmers and their relatives outnumber farm workers and where the scattered homestead is the typical form of settlement. Welsh agriculture is essentially pastoral in character and grass is the principal crop, with oats as the only cereal of any real importance. Permanent grass and rough grazings dominate the rural scene in a country of high rainfall where the soils are, for the most part, deficient in lime and phosphate. In general, altitude and light are the most important limiting factors, and well over a quarter of the total land area lies above the thousand-foot contour."

Following this introduction the authors describe the present situation and past trends in many different aspects of Welsh agriculture. These include crops, livestock, markets, population and labor, ownership and occupation, types of farming, cooperation and education. Most of the information on trends goes back to about 1870. The footnotes giving the sources of information are arranged in the appendix so that they can be easily found by one who is interested. The appendix also includes numerous statistical tables.

Many readers will find the description of the transition from subsistence farming to production for the market to be of special interest. The authors state that this transition was virtually complete by 1939.

The chapter on "Education and Administration" leaves the impression that the development of agricultural research and extension has varied greatly in different parts of Wales. The authors conclude that the development has been "due at least as much to hazard as to design." The development of agricultural education in an old country is quite different from its development in a newly settled region. A reading of this chapter suggests to this reviewer that we in the United States and Canada have been fortunate that we don't have a large amount of tradition.

The authors are to be complimented on the preparation of a book which will meet the needs of at least three types of readers:

- (1) One who wishes a brief summary of the agriculture of Wales, but has only a few moments in which to do his reading on this subject.
- (2) One who wishes a fairly detailed summary of various aspects of Welsh agriculture and their historical development.
- (3) One who wishes a source book of agricultural statistics.

STANLEY W. WARREN

*Cornell University*

*Agrarian Problems from the Baltic to the Aegean.* Discussion of a Peasant Programme. London: The Royal Institute of International Affairs, 1944. Pp. 96. \$1.00.

This small volume with an introduction by Sir E. John Russell is written around a sort of "Declaration of Independence" for peasants in the seven countries of central and south-eastern Europe—Bulgaria, Czechoslovakia, Greece, Hungary, Poland, Roumania, and Yugoslavia. A series of conferences among citizens of these countries now residing in exile in London resulted in the formulation of "A Programme of Popular Liberation and Progress for the Peasant Communities in Central and South-Eastern Europe." Most of the signers of this document had been connected with peasant movements in their respective countries. Each was familiar with the farm problems of his homeland.

The program occupies only five pages of the publication. The remainder contains background material setting forth the nature of the problems in greater detail, and at the same time furnishes the reader with a basis for a keener insight into the great array of difficulties to be overcome in bringing about any satisfactory solution.

While conditions vary, of course, in different sections covered by these seven states, it can be said with an acceptable degree of accuracy that:

These countries are predominantly agricultural.

Urban industry, with the exception of the Western provinces of Czechoslovakia, has not been developed.

The land, over most of the area, is not of the best.

Cereals are the main crops.

Animal production occupies a relatively small place in the farming economy.

Population presses upon the land.

Capital for farming purposes is woefully lacking.

These seem to be the largest knots of an especially knotty situation. What is to be done about it? The outstanding proposals of the program are:

The peasants must be enabled to become landowners. This involves the expropriation of large estates, and their sub-division into peasant properties. Stress is also laid upon the necessity of formulating measures designed to insure a continuance of peasant ownership, once the peasant has title to the land.

Cooperation is looked upon as one of the promising means of self-help. Credit must be provided—probably by the state. In order to insure stable prices of agricultural products, it is recommended that the governments intervene at both the national and international level.

American readers will be interested in the appeal for outside assistance as illustrated by the following quotation:

"We recognize that its execution will depend in large measure on the extent of the help which will be forthcoming from Great Britain, the U.S.A., and the U.S.S.R. In the postwar period the immediate operation of a common plan to assist in the recovery of this region is essential, and we regard it as a matter of the first importance that the United Nations should now prepare a scheme for the supply of food, industrial products and raw materials, and that these goods should be supplied to the peasant communities in return for their services on projects of reconstruction."

The reader of this little book is likely to be impressed more by the enormity of the task than by the efficacy of the proposed solutions.

ASHER HOBSON

*University of Wisconsin*

*Food Rationing and Supply, 1943-44*, Economics, Financial and Transit Department, League of Nations. New York: Columbia University Press, 1944. Pp. 101. \$1.00.

"The primary purpose of this study is to give a picture of the amount, composition and nutritive value of the legal food rations in Europe and elsewhere toward the end of last year [1943]." The subject is discussed under three main headings: "Food Rationing and Consumption," "Nutrition and Health" and "Production and Supply."

The first section comprises 65 of 101 pages and most of these relate to Germany and "German-Occupied Europe." The limited space given to other countries is influenced by two major factors: (a) rationing is less important, or (b) data are not available for an adequate picture. Rations are discussed both in terms of individual claims and how the rations add up for household groups. No attempt is made to measure the effect on consumption of inability to get legal rations.

For lack of better measures, nutrition and health are considered largely in terms of morbidity, mortality and birth rates.

The section on production and supply takes a world view, Continental Europe apart from Russia getting only 2 out of the 21 pages. A good deal of attention is given to crop and livestock prospects for 1944.

Those concerned with appraising food shipments needed for liberated Europe will find much of interest in this monograph. Its usefulness would have been enhanced by an index.

MARGARET G. REID

*Iowa State College*

*World Wheat Production*, V. P. Timoshenko. Stanford University, California: Food Research Institute, 1944. Pp. 148. \$3.00.

This book brings together three related studies by the author which have previously appeared in the Wheat Studies of the Food Research Institute. They are:

1. Cycles or Random Fluctuations
2. Variability in Wheat Yields and Outputs
3. Interregional Correlations in Wheat Yields and Outputs

Professor Timoshenko has made an exhaustive study of the available data on this subject and has employed sensitive statistical

techniques in an effort to find some measure of correlation in wheat yields and outputs. As one would expect from an intelligent analysis of this problem, the conclusions he drew, are with few exceptions of a negative nature.

In Part I, "Cycles or Random Fluctuations," he found that fluctuations in regional wheat yields are determined primarily by chance and seasonal weather variations. His work was further complicated by the lack of any correlations or conclusions available from the vast amount of research done on weather cycles. Due to artificial conditions governing the expansion or contraction of acreage, fluctuations in output tend to appear less random than fluctuations in yield per acre. The use of statistical measurements shows that cyclical changes in yield in consecutive years are smaller than year-to-year random fluctuations. The most important fact obtained from the use of the various statistical techniques employed in this study was the discovery of cycles in wheat yields of three and one-half years' average duration, and the fact that these cycles appear in yield fluctuations with greater relative frequency than in business cycles.

In Part II of the study entitled "Variability in Wheat Yields and Outputs," Professor Timoshenko found that the most important general factor governing high relative variability of yields appears to be a *continentality* of climate. This was particularly apparent in data for the Northern Hemisphere but was also present in marked degree in data for areas of large variability in the Southern Hemisphere. Aridity of climate is the second characteristic most common to areas of high variability. Perhaps the most important discovery in this connection is the fact that wheat yields are relatively stable in the semi-arid regions which are most favorable to the cultivation of winter wheat. Professor Timoshenko also found that the variability of wheat yields between large producing areas is less than the variability of yield within the regions composing those areas. The vital factor in this type of analysis is the possibility of development and refinement to the point where such data could be used for guidance in the planning of rational policies within large producing and consuming areas and in formulating international wheat agreements.

In his analysis of "Interregional Correlations in Wheat Yields and Outputs," Part III, Professor Timoshenko found that the interregional correlations are, to a certain degree, negative. Variations



in wheat production in the wheat-importing areas of Europe bear little relation to variations in wheat production in the wheat-exporting regions of Europe and the world. This factor of independent variability, both within the wheat-exporting regions and between the wheat-exporting and importing regions, contributes to a stabilization of the wheat supply on the world market and eliminates the possible danger of a total world wheat crop failure. The only close correlation among regional wheat yields and outputs was found within limited areas having similar climatic and weather conditions. According to Professor Timoshenko there are no cycles, in the correct definition of the word, existing in world crop production. There may be trends due to the cumulation of random variations, but these are characteristic of regions and not common to total world production. Professor Timoshenko's study considers the variability about a trend and gives no indication of any relationship between the trends themselves. Of importance to the practical business man is the implication contained in this study which considers the fluctuations in crop production as one of the possible explanations for fluctuations in the volume of business. It is probable that significant variations in crop production in the large producing countries play a more important role in influencing world agricultural trade than small variations in total world crop production. To this extent the possibility for stabilization and control in world trade may offer opportunities for intelligent planning and cooperation on the problem of export quotas and surpluses in the future.

Professor Timoshenko has done a splendid job of research in this field and has paved the way for further statistical study with a practical application to world trade problems which will confront us in the post-war period.

JULIUS HENDEL

*Cargill Incorporated,  
Minneapolis, Minnesota*

*Postwar Monetary Plans and Other Essays*, John H. Williams. New York: Knopf, 1944. Pp. xxxii, 297. \$2.50.

This book deals with the problem of economic stability in both its domestic and international aspects. The book consists of a preface and eleven chapters. In the preface, Williams comments on "The Joint Monetary Plan." Because of this preface and the fact

that the succeeding three chapters contained in Part I deal with the developments of the Joint Monetary Plan (which became the formal agenda of the recent International Financial Conference), the volume no doubt will be regarded as a book on currency stabilization—1944 model.

For the readers of this JOURNAL, attention should be called to the fact that the book, except for the preface, is a collection of Williams' writings in the pages of *Foreign Affairs*, *American Economic Review*, *Economic Journal*, and other journals. In addition to this collection, it should be pointed out, because of its great value, that Williams has now written one additional article "International Monetary Plans: After Bretton Woods," *Foreign Affairs*, October 1944. Mention of this article certainly should be made, because it is a direct continuation of the analysis contained in the book. It also should be mentioned because of its great importance in the process of making any modification that may be made in the Bretton Woods monetary plans and because, if the plans are finally approved without change, the article will be most valuable as a guide to difficulties that certainly will face the managers of the Fund and the Bank when operations start. Seldom is such an analysis available to those starting on a new course, and if some early pitfalls can be avoided, the debt to Williams will be great.

Reverting to the book, there are two parts which follow the first section which is concerned with the two new world-wide financial institutions, whose charters are soon to come before Congress. Part II is on the subject of domestic, fiscal, and monetary policy, and is more heterogeneous because it has chapters on the subjects of deficit spending, the implications of fiscal policy for monetary policy and the banking system, and on 1935 banking legislation. The final section, Part III, contains five essays on international trade and monetary problems, and the dates of whose initial publications range from 1929 to 1937. Here the subjects include international trade theory, the gold standard, the question of internal *versus* external stability of the currency, and international monetary organization and policy. Finally, the range of the book is further broadened by the inclusion of useful appendixes consisting of the texts of the Keynes and White Plans and the Joint Statement of April 21, 1944.

The reader who wishes to round out his collection with current documents will wish to secure a booklet "Articles of Agreement,

International Monetary Fund and International Bank for Reconstruction and Development" issued by the U. S. Treasury, Washington, and reprints of "Bretton Woods Agreements" (by E. A. Goldenweiser and Alice Bourneuf, Federal Reserve Bulletin, September, 1944) issued by the Board of Governors of the Federal Reserve System, Washington. Both are freely available. The first of these contains the agreements reached at the United Nations Monetary and Financial Conference held at Bretton Woods, N. H., July 1-22, 1944; the second is excellent for its straightforward interpretation of all, including the very difficult, technical provisions of the agreements.

Because the subject *is* technical, a great responsibility falls upon the members of our profession. It is to assist in the necessary public education so as to find "a way to keep the process of making up our national mind abreast of the process of international negotiation" (Williams). This is the task ahead. Bringing the job to a desirable outcome is wanted. The reviewer believes that process is most advanced when account is taken more of able criticism than well-intentioned enthusiasm. If this is the case, there is no better place to find it than in Williams' writings.

ARTHUR R. UPGREN

*Minneapolis, Minnesota*

*State and Local Finance in the National Economy*, Alvin H. Hansen and Harvey S. Perloff. New York: W. W. Norton & Co., Inc., 1944. Pp. 310. \$3.75.

In this book, Hansen and Perloff carry forward and endeavor to buttress the main thesis of Professor Hansen's previous book, *Fiscal Policy and Business Cycles*. They maintain that it is of utmost importance that the financial machinery of government and the intergovernmental fiscal relations be geared to the requirements of our present day economy.

The treatment of the subject is divided into three parts. In Part I the problems and the deficiencies of the state and local tax system are discussed. Part II serves to present suggestions for strengthening the fiscal base and for raising service standards. In Part III an analysis is presented of the national public expenditures, income creation and financial planning. In the last chapter of Part III, a positive program for a reorganization of the tax structure of the nation is proposed.

The needs for greatly increased public expenditure to remedy basic deficiencies and inequalities relative to education, health, housing, conservation, social security, etc. in the various states of the Union are set forth very forcibly. Meeting such needs adequately would not only provide much employment, but it would also greatly strengthen our national economy at its foundation. Furthermore, much of such expenditure could be timed so as to reduce the peaks and valleys of the business cycle.

In this book, however, the authors devote more space to taxation than to expenditure. In their practical proposals for a better tax system, they are guided, they say, by the principles of tax adequacy, equity of burdens, simplicity, certainty, and economy in administration and compliance, economic soundness and inherent flexibility. It is obvious that in reality, no perfect attainment of the goals set by these principles is waiting around the corner. But the authors believe that we could draw closer to the ideal of what people today would consider a good fiscal system.

It is the view of the authors that tax barriers to interstate commerce should be eliminated because a well-designed system should avoid placing an undue burden on concerns doing business in many states and localities and thereby putting them at a competitive disadvantage as against intra-state business. Furthermore, the authors maintain that governments may use tax and other fiscal measures in a variety of ways to regulate business or to direct business decisions in the interest of the public welfare. The tax system should be geared to a rational fiscal policy aimed at economic expansion and cyclical stability. "Thus, it should tap mass purchasing power at a minimum, except when inflationary developments are threatening" (p. 284). As a complement to the counter-cyclical policies, promotion of a better distribution of income is advocated.

While this book gives attention to the federal tax structure, the main concern of the authors is the consideration of the problems of state and local finance, the reform of state and local tax structures, and their coordination with the national fiscal system in order to promote the national economy.

The authors propose the abolition of the general sales tax on the condition that other and more desirable taxes are increased. A further proposal is that personal income taxes should provide a fairly substantial part of all state taxes. The authors maintain that this would permit the states to rely much more heavily on income

taxation and to that extent reduce their regressive and repressive sales taxes and other excises.

A further point of great importance in the proposed state tax structure is the necessity for a thoroughgoing reform of the business-tax structure within each state. The most important method of taxing business concerns would be the corporate net income tax. The Massachusetts formula would be used to determine the state share where a concern does business in more than one state. It is anticipated that business enterprises would be able to estimate costs more accurately and to plan more securely, and that the burden on private enterprise during periods of financial distress would be greatly lessened.

On the local level of taxation, it is proposed that a system of local sharing of certain state collected taxes take the place of the present economically unsound and chaotic mass of local and state taxes. This is essentially an extension of the recommendation that the federal government should administer all income taxes (and possibly some other taxes also) and share collections with the states.

Hansen and Perloff have supplied in this volume a valuable text book for students of public finance and also for those statesmen and political leaders who want to be informed about the problems and about their possible solution. Naturally it will not suffice for an enlightened political leader merely to know the facts; he will have to face an even more difficult task of overcoming local prejudices and jealousies. Despite the many statistics which have been presented to support their views, Hansen and Perloff are well aware of the fact that it is beyond the scope of their book to do more than dispel some of the ignorance of the present local and state tax structures and their economic consequences and to suggest positive ways of overcoming some of the opposition of vested interests.

ROY G. BLAKEY AND GUSTAV PRIMOSIGH

*University of Minnesota*

*The T.V.A.: Lesson for International Application*, Herman Finer. Montreal, Canada: International Labor Office. Studies and Reports, Series B, No. 37. 1944. Pp. 289. \$2.00.

This book by a student of public administration deals with an important and timely subject: It aims to deduce the implications of the T.V.A.—experience for international action in resource utilization.

Treatment of the domestic aspects of the T.V.A.—to which the bulk (pages 1 to 215) of the study is devoted—is based on material

furnished by the T.V.A. itself, or on portions of official reports and hearings favorable to it. The description is readable, detailed and contains many interesting observations. Superlatives with respect to achievements are not infrequent. Relevant studies, for example the recent book by Ransmeier,<sup>1</sup> are not mentioned. In view of the aims of the author, a more analytical attitude towards the T.V.A. comparing it with possible alternatives (state compacts, regional planning committees, coordinating boards of existing agencies, public works in combination with public credit, public guarantees for private credit etc.) may have been more useful than a compilation of facts easily accessible elsewhere.

Lack of economic analysis is especially noticeable at two crucial points, namely, in the appraisal of T.V.A. achievements and in the discussion of cost allocation. Comparisons are made between percentage changes in population, employment, income and similar indices in the "power area," in the "valley states" and in the United States between 1930 (1933) and 1940. The impact of the depression in the beginning of the Thirties and of the war at the end of the Thirties varied greatly between different parts of the United States. Changes in world and domestic demand for cotton, pulp and food and the effect of agricultural (AAA cotton program, for example) and other public policies (monetary, labor, social security) are not sufficiently considered. The reviewer submits that these effects were far greater than those of the T.V.A. Even from the highly selected figures presented in the study, it is evident (p. 211) that the gain in manufacturing employment between 1930 and 1940 was considerably smaller in the "power area" than in the "valley states." In comparing changes of per capita incomes between 1933 and 1940, it is emphasized (p. 212) that the increase in the United States as a whole was only 57 percent whereas changes in Alabama were 93 percent, in Mississippi 82 percent and in Tennessee 77 percent. If the greater gains in these three states were caused by the T.V.A.—as alleged—the difference could be expected to be especially great for Tennessee, the main T.V.A. state. The author himself stresses this argument in pointing (p. 214) to the smaller number of migrants from Tennessee between 1930 and 1940 as compared with 1920 to 1930. If changes in agricultural incomes, especially of cotton farmers (and the causes for these changes) between 1933 and 1940 had been studied, and if the general regional dynamics of rural-urban and urban-rural migration during depres-

<sup>1</sup> J. S. Ransmeier. *The Tennessee Valley Authority*. Nashville, 1942, 478 pages.

sion and prosperity had been taken into account, contradictory and unnecessary statistical data could have been omitted. It may be regarded as uncontroversial that the T.V.A. has created large social and private benefits. Points for analysis would have been whether these benefits are greater than costs (Congressional appropriations exceed 750 million), and how the T.V.A. compares with other alternatives for spending public funds.

In discussing the problem of cost allocation, the T.V.A. procedure is described and approved. The rigid connection between rate making and cost allocation and the economics of the "yardstick" idea are not questioned. These two features of the T.V.A. do not appear suited for international application. A clear distinction between the problems of allocating past costs and the problems of rate making appears even more desirable in the international than in the domestic realm.

The single chapter (pp. 216-236) which deals with the problem of an international T.V.A. appears rather general and inconclusive. No attempt is made to indicate in what respect, where, and under what conditions an international T.V.A. would be preferable to other methods of international cooperation and investment in resource utilization. The reviewer feels that new methods are desirable and will be used in the future. However, there is no vacuum in this field. Many international treaties for utilizing resources (river navigation and regulation, use of harbors, flood control, water power, wild life conservation) exist, an international bank has been in operation, and many types of international investment, ranging from government to government loans to purely private transactions have been tried. Likewise, various types of planning and control, ranging from all-powerful chartered companies in colonial areas to the purchase of stocks and bonds of foreign companies remaining under full private control in the homeland, have been and are being used. What types of investment, planning and control are best suited for the Danube Valley, the Amazon, the Yangtze, or the Congo cannot be ascertained by a purely descriptive approach to the T.V.A. experience in the United States. An analysis of the political, economic and social problems of each area and a critical study of the shortcomings in types of international investment used in the past appear more relevant.

S. v. CIRIACY-WANTRUP

*Washington, D. C.*

## NEWS NOTES

The members of the Canadian Agricultural Prices Support Board are: J. G. Taggart, Chairman; A. M. Shaw, and J. F. Booth. Mr. Taggart was formerly Minister of Agriculture for Saskatchewan. Mr. Shaw is Director of Marketing, Dominion Department of Agriculture and Dr. Booth is Associate Director in Charge of Agricultural Economics. He and Mr. Shaw will continue in their present positions and will act as members of the Board only until permanent appointees are named. The Board was created pursuant to the passage of legislation providing for "the support of the prices of agricultural products during the transition from war to peace."

Desmond L. W. Anker resigned from the staff of Oklahoma Agricultural and Mechanical College on August 1 to join UNRRA. He is at present stationed in London. Mr. K. C. Davis has been appointed in his place.

Frank D. Barlow, Jr. has been appointed to the position of associate research economist in the Department of Agricultural Economics, Louisiana State University at Baton Rouge. He reported for duty on September 1 and will conduct research related to the farm business economy in the delta and upland cotton areas in Louisiana. Mr. Barlow was formerly at North Carolina State College.

Joseph A. Becker, Chairman of the United States Crop Reporting Board, has transferred to the Office of Foreign Agricultural Relations as Assistant Chief of the International Commodities Branch.

Byron R. Bookhout has been appointed Extension Specialist in Farm Management of Michigan State College. Dr. Bookhout completed his graduate work at Purdue before enlisting in the U. S. Army Air Corps. After about two years of service he received his honorable discharge in October 1944.

R. G. Bressler, Jr., Department of Agricultural Economics, University of Connecticut is on leave at Harvard University until June 30.

G. L. Burton has been appointed Grain Statistician with the Canadian Dominion Bureau of Statistics, to succeed James McAnsh who has gone to UNRRA.

W. F. Chown, Economist, of the Economics Division, Canadian Department of Agriculture, who was on loan to the Wartime Prices and Trade Board has resumed his work with the Economics Division and is also acting as Economic Assistant to the Agricultural Food Board.

Ralph Dewey, Principal Transportation Economist with the WFA in Washington, spent the month of November on leave at Iowa State College, preparing a report on freight rates differences in different parts of the United States, including the State of Iowa.

Helen C. Farnsworth, Associate Economist, Food Research Institute, Stanford University, was recently elected president of the San Francisco Chapter of the American Statistical Association for 1945.



John R. Greenman has been appointed as Professor of Agricultural Economics at the University of Florida. Mr. Greenman is transferring from the position of Principal Fiscal Analyst in the Bureau of the Budget, Washington, D. C.

Herman M. Haag has resigned from his position at the University of Missouri to become economist for the Missouri Farmers Association.

Clifford M. Hardin recently accepted the position of Associate Professor of Agricultural Economics at Michigan State College. For the past three and one-half years he has been associated with the Department of Agricultural Economics at the University of Wisconsin as Assistant Professor of Agricultural Economics. In his new position, Dr. Hardin will be doing research, teaching and extension work in the field of agricultural marketing and general economic information.

Herbert Howell, fieldman for the Eastern Iowa Farm Business Association, accepted a position of assistant extension professor of agricultural economics at Iowa State College, January 15.

H. J. Hudek, recently in the Canadian Army, has been appointed to the Agricultural Branch, Dominion Bureau of Statistics, in charge of Farm Finance.

Leonid Hurwicz of the Department of Economics, University of Chicago, spent the month of December at Iowa State College as consultant on problems in statistical and mathematical economics.

H. Brooks James, Agricultural Economist with the Bureau of Agricultural Economics, Washington, D. C., has accepted an appointment as Associate Professor and Agricultural Economist, at the State College of Agriculture, University of North Carolina.

Joseph G. Knapp, Principal Agricultural Economist, Cooperative Research and Service Division, Farm Credit Administration, has been granted a six months' leave of absence to permit him to work on a study of the cooperative purchasing movement for the Brookings Institution.

H. B. Kristjanson formerly on the staff of the Dominion Economics Division has been appointed Assistant Professor of Farm Management, University of Saskatchewan.

L. Lorinez for some years prior to the war on the Belgrade staff of the Office of Foreign Agricultural Relations of the United States Department of Agriculture, has joined the staff of the Economics Division, Canadian Department of Agriculture with headquarters at Ottawa.

Alan G. MacLeod, Secretary of the New England Research Council, returns to Storrs, Connecticut, January 1 after spending four months in Canada as Economic Advisor to the Manitoba Government.

Clyde O. May, Extension Specialist in Farm Management at Michigan

State College has resigned to become associated with the H. H. Halderman Farm Management Service of Wabash, Indiana.

William H. Nicholls has resigned his position as Associate Professor of Agricultural Economics at Iowa State College to accept an appointment as Research Associate (with the rank of Assistant Professor) in Agricultural Economics at the University of Chicago. He will be engaged in the development of research in the economics of the agricultural processing and distributing industries.

Margaret Reid of Iowa State College has accepted the position of Chief of the Division of Family Economics in the Bureau of Human Nutrition and Home Economics at Washington.

J. Wayne Reitz has resigned from his position at the University of Florida to accept the position of Economic Analyst with the United Growers and Shippers Association, Orlando, Florida.

Waldo S. Rowan, formerly Assistant Agricultural Economist, University of Tennessee, has been discharged from the Air Corps and has accepted a position with the Bureau of Agricultural Economics, Southern Region, with headquarters in Atlanta.

Sigfried v. Wantrup of the University of California, Berkeley, has been on a six months' leave of absence to permit him to complete a study on the economic theory and public policy of conservation under a grant from the Social Science Research Council. He is spending several months of this leave as a Visiting Scholar at the Brookings Institution.

H. M. Walters has resigned his position as assistant in the Department of Rural Economics, Ohio State University, to become Assistant Supervisor of Dairy Trade Practices in the Department of Agriculture.

David Weeks of the Giannini Foundation and Division of Agricultural Economics, University of California, has just returned from a year's assignment as Director del Departamento de Agricultura, Corporacion Boliviana de Fomento. This public development corporation has a working capital of United States \$26,000,000 somewhat more than a third of which has been appropriated and paid in by the Bolivian Government. The balance has been made available through a loan by the Export Import Bank of the United States. The immediate agricultural program of the corporation now underway has as its objective the making of Bolivia self sufficient in the production of sugar, rice and meat. Other commodities will be included as soon as feasible. In working out the details in the organization of this program, Dr. Weeks travelled extensively not only in Bolivia but in other countries in South America particularly Argentina and Brazil.

## GEORGE SIMON WEHRWEIN

George Simon Wehrwein was born at Newton, Manitowoc County, Wisconsin, on January 31, 1883. He died on January 10th, 1945.

George attended high school at Manitowoc, Wisconsin, and finished a course at the Oshkosh State Normal in 1908, after which he was a high school teacher. He attended the University of Wisconsin, graduating from the College of Agriculture in 1913. He was then engaged by the University of Texas as an extension teacher, where he remained for three years, going to a similar position at the State College of Washington for one year. From Washington, he went as Associate professor to the State College of Pennsylvania. In the fall of 1919 he returned to Wisconsin for graduate work, receiving his Master's degree in 1920, and his Ph.D. in 1922.

Professor Wehrwein became an assistant to Professor Richard T. Ely in 1922, and continued in Land Economics the rest of his life. He remained at the university of Wisconsin until 1925 as a part of the Institute of Land and Public Utility Economics until, in that year, it was transferred to Northwestern University. He returned to the University of Wisconsin in 1928. He was President of the American Farm Economic Association in 1942.

As a teacher Professor Wehrwein was unusual. He taught land economics for years, before there was a text of any importance. Using, possibly a half dozen different authors, he would, as a rule, be able to discover some sort of trend among them. It was thus necessary for the student to think in order to succeed. For holding the minds of the class to a line of thought for the hour he was one among many. These discussions, continued from year to year, finally took the form of a textbook on Land Economics.

As an investigator Wehrwein was also remarkable. His studies covered the whole use of the land.

Recognizing the responsibility of society in bringing about constructive land utilization, he developed more than any one else the principle of zoning. He took a leading part in the movement which led to the application of this principle in the State of Wisconsin. His influence in the field of zoning extended far beyond the State and did much to shape the thinking of economists and the public generally in reference to this field. One of his special interests was the value and use of land for public recreational purposes.

As a citizen Professor Wehrwein was held in great esteem. His judgment grew with the years. The influence he set in motion will continue.

His greatest desire was to see the naked hills again covered with trees. Years ago it was the hope of the lumbermen that soon the hills would be sufficiently bare to be plowed. At present it is the hope of our best citizens that in the future, not too distant, that trees will again cover our barren hills, and that valuable timber will come in, no doubt slowly, to produce through coming years the timber crop, with all its valuable assets, which in our haste we destroyed.

B.H.H.

# MINUTES OF THE MEETING OF THE EXECUTIVE COMMITTEE AMERICAN FARM ECONOMIC ASSOCIATION

WASHINGTON, D. C., FEBRUARY 2 AND 3, 1945

## Members present:

Eric Englund, Presiding

Karl Brandt

G. W. Forster

Asher Hobson

L. J. Norton, President-elect

S. E. Johnson

W. C. Waite, Editor, was also in attendance

M. R. Benedict was unable to attend.

## *Report of the Election Tellers*

We, H. M. Dixon and E. C. Johnson, having been appointed by Dr. Eric Englund, President, to serve as tellers to inspect and count ballots for the election of officers of the American Farm Economic Association for the year 1945, do hereby certify that all ballots were inspected and counted. The results of the votes are as follows:

President	L. J. Norton
Vice-president	E. J. Working
Vice-president	D. Howard Doane
Secretary-Treasurer	Asher Hobson
	(Signed) H. M. DIXON
	(Signed) E. C. JOHNSON

## *Report of the President—1944*

It seems appropriate that this report should summarize briefly some of the principal events, activities and problems of the Association during the years, and perhaps to offer such views as may be of interest to the Executive Committee and the members.

It was necessary early in the year to appoint a new editor of the JOURNAL OF FARM ECONOMICS. Professor H. B. Price, of the University of Kentucky, who had served with distinction in this capacity, was compelled for reasons of health to relinquish the editorship. He did so with great reluctance, but it was altogether necessary to his recuperation which we understand has been largely

achieved. Before asking to be released, he arranged with Professor C. M. Clark of the same institution to carry on, at least through the issue then in preparation. Professor Clark and his able assistant, Mrs. Myra Gentry, carried on in an excellent manner, and for this we are happy to express to them our deep appreciation. We are also grateful to Dean Thomas P. Cooper for his friendly interest and cooperation in this transitional arrangement.

Meanwhile the Executive Committee, after a careful canvass of the field, was singularly fortunate in securing the consent of Professor Warren C. Waite of the University of Minnesota to undertake the editorship despite his already heavy work and the comparatively short notice. This made it possible to carry on with the JOURNAL without a break in its schedule. That this was a fortunate choice has been further demonstrated by the quality of the issues that have been produced under his direction.

The principal activities of our Association since its beginning have been the publication of the JOURNAL and the holding of annual meetings. These activities will undoubtedly remain among our principal undertakings. As already mentioned the JOURNAL was continued without interruption, but the Executive Committee again decided for the third consecutive time, against holding the annual meeting in 1944 because of wartime conditions and official policy in reference to travel and the holding of conventions. There were, of course, well-grounded differences of opinion.

The wisdom of this decision, in which your president heartily participated, later gave him increasing concern when it became known that meetings were planned by several organizations in the field of the social sciences, and many other associations as well, and that meetings actually held had even larger attendance than formerly. This was disturbing, knowing that the opinion of the Association remained somewhat divided on the matter. Viewing it now in retrospect, it appears that the original decision was well justified, the transportation situation in respect to travel having become so difficult that the Office of Defense Transportation requested recently that scheduled meetings be called off.

For a time it seemed that it might be advisable to hold a minor meeting in conjunction with the meeting of the Executive Committee with attendance consisting chiefly of such members of the Association and friends who might be available in the general locality of the place of meeting. A restricted program for such a

meeting was proposed but it was voted down by a majority of the Executive Committee because it was felt that the reason for our regional decision—the transportation situation—was as strong as any time in the year and even stronger, and that the time was by then too short for the necessary preparations.

The holding of regional meetings in lieu of the national meeting was discussed last year by the Executive Committee with the recommendation that serious consideration be given to the holding of a regional meeting, or meetings in 1944. While this was seriously considered by your president, he recognizes that he may have presumed too much on his authority in not systematically canvassing the committee or a substantial section of the membership on this matter. Be this as it may, it appears to him that one or more regional meetings would fall, to a large extent, in the same category as the annual meeting in reference to travel in these times. While respectfully recognizing views to the contrary, he is strongly of the opinion that the fact that some professional meetings such as ours were not scheduled and the further fact that others were called off, should not jeopardize the standing of any of the Association concerned, for the strength of professional societies should not depend on "business as usual" in wartime.

No special committees were appointed during the year, as it was thought best not to ask members of the Association, already heavily loaded with special wartime work as well as regular duties, to engage in committee work which might be deferred.

During the past year certain matters have come to the attention of your President on which he begs permission to offer his views for what they may be worth.

1. *Regional Associations.*—The desirability of regional associations in our field has been suggested from time to time over a period of several years, and their possibility has been demonstrated in the Western Farm Economics Association. The proceedings of that association for 1944 recently made available, contains many contributions including the presidential report in which the membership of the general association will find much of interest and value.

Such associations have much to offer for the advancement of agricultural economics in their respective regions. They might well be encouraged as a normal, long-time development, provided that two general conditions are met. In the first place, their programs

no one seriously advocates, would deny to the field of economic policy and programs the guidance which is rightfully expected of the members of our profession.

Unfortunately, cases have arisen tending to infringe upon that academic freedom upon which scientific progress so largely depends. In some instances, it has been suggested that the Association should take "a strong position" even to the extent of challenging particular institutions involved. In my view, we can as an Association enhance the professional standing of our field in the long run by relying first of all upon the high standards of work and the bearing of the program to the real needs of our field. This implies concurrent emphasis upon academic freedom and academic responsibility.

Particular cases of infringement on academic freedom, found to be such upon careful investigations of all the facts, can be handled by the Association of University Professors, long dedicated to the task of investigating and passing judgment upon concrete cases. In my opinion an organization such as ours should not attempt to compete with that Association or to duplicate its work.

6. *Inducements for Productive Scholarship*.—It would be well to strengthen our efforts in the direction of securing means by which stronger contributions in our field may be encouraged. In addition to professional recognition, other stimuli in the form of material awards may be appropriate. At the last meeting of the Executive Committee it was recommended that a modest, experimental beginning be made in this direction by granting some type of recognition for the best article or articles appearing in the JOURNAL. Your president may have been in error in assuming that, for the present, funds for this purpose would need to be found outside of the Association Treasury. If it was intended that Association funds should be used, he can only suggest that such a step can still be taken, certainly in the year ahead.

Meanwhile informal inquiry has been made as to the possibility of finding funds for this purpose—funds which could be used as prizes for outstanding contributions to the JOURNAL. The suggestion was received from a possible source accompanied by some encouragement as to future grants, that the Association's own funds might be used for this purpose, thus providing a demonstration of the effectiveness of such inducements, possibly leading to special provision of funds in the future. An item on our agenda for

this meeting of the Committee is intended for our further consideration of this matter.

Meanwhile, a new opportunity has appeared recently, related to this question. An anonymous donor has generously offered a substantial sum of money to be used under the auspices of our Association in 1945 as prizes for outstanding contributions in the field of agricultural price policy, including the parity formula. The terms under which this fund is offered are broad and generous with full liberty of scholarship, and for the sole purpose of broader understanding of the considerations involved in agricultural price policy. The offer will be laid before the Executive Committee at this meeting for consideration and action. This will afford a new opportunity to broaden our Association activities in behalf of a wider and more fundamental public understanding of this vital issue of agricultural policy.

(Signed) ERIC ENGLUND, *President*

Received by the Executive Committee and recommended for publication in the JOURNAL.

### *Report of the Secretary-Treasurer*

For the Fiscal Year Ending November 30, 1944

*Membership*—At the close of the fiscal year, the Association had 1,102 members. This is a drop of 15 as compared to 1943. It becomes increasingly apparent that as the war continues, more and more members in the armed forces will discontinue their membership in Association's such as ours. We lost 45 individual members during the year, but gained 30 libraries and firms. The following tabulation gives the comparison by groups:

	1944	1943	
Individual Members.....	767	806	-39
Junior Members.....	17	23	- 6
U. S. Lib. and Firms.....	227	214	+13
Foreign Libraries.....	91	74	+17
	<hr/> 1,102	<hr/> 1,117	<hr/> -15

The table does not include 35 subscriptions to the JOURNAL OF FARM ECONOMICS by the American Library Association for later distribution in foreign countries.

Our inventory of back numbers has grown to such proportions as to make it necessary for the publisher to place them in the hands of



a commercial storage company at Association expense. The publisher, however, agrees to continue to handle the mailing of back numbers.

*Finances*—The Association ended the year with a balance from operations, of receipts over expenses of \$2,575.88, the highest in the Association's history. This record is due, however, to force of circumstances rather than from plans of management. Operating income was up some \$700. This came about largely through a large sale of back numbers of the JOURNAL. Operating expenses were down mainly because of a reduction in the number of pages of the JOURNAL, and a slight reduction in the number of JOURNALS printed. These reductions may be charged to the war emergency. With a return to our usual level of activities, net operating income will drop.

Non-operating income was \$2,085.29. Total excess receipts over expenses for the year amount to \$4,661.17.

The operating and financial statement for 1944 as compared to 1943, are given below.

OPERATING STATEMENT  
AMERICAN FARM ECONOMIC ASSOCIATION  
Year Ending November 30, 1944

<i>Operating Income</i>	1944	1943
Receipts from dues.....	\$5,922.22	
Back Numbers sold.....	549.33	
Reprints sold.....	120.83	
Advertising sold.....	125.00	
	<hr/>	
	\$ 6,717.38	\$ 6,005.63
 <i>Operating Expense</i>		
JOURNAL OF FARM ECONOMICS		
Vol. XXVI, 4 issues.....	\$2,941.21	
4 reprints...	376.46	
	<hr/>	
	\$3,317.67	
Clerical & Editorial Expenses	213.37	\$ 3,919.54
Executive Committee Meeting.....	176.78	
Packing JOURNALS for Storage.....	119.40	
Postage.....	117.71	
Back Numbers Purchased..	107.50	
Office Supplies, Telegrams..	33.06	
Ballots and Envelopes, 1943.	18.25	
Travel Secretary.....	20.26	
Surety Bond.....	17.50	
	<hr/>	
	\$ 823.83	
		\$ 4,141.50    \$ 4,696.46

Excess, Receipts above Operating Expenses.....	\$ 2,575.88	\$ 1,309.17
Plus Non-Operating Income		
Dividends and Interest, Stocks & Bonds	\$1,403.80	
Profit on sale of stocks over Market value, Dec. 1, 1943.....	678.68	
Accrued Interest, Savings Account....	2.81	
	<hr/>	<hr/>
	\$ 2,085.29	\$ 1,765.50
Total Excess, Receipts above Expenses.....	\$ 4,661.17	\$ 3,074.67

FINANCIAL STATEMENT  
AMERICAN FARM ECONOMIC ASSOCIATION  
December 1, 1944

Cash Bank balance.....	\$10,177.24	
Stocks Market value.....	22,997.13	
Bonds Market value.....	9,745.00	
Savings Account.....	127.35	
	<hr/>	
		\$43,046.72    \$35,710.42
<i>Proprietary Interest</i>		
Net worth December 1, 1943.....	\$35,710.42	
Plus net returns for Year		
operating.....	2,575.88	
non-operating.....	2,085.29	
	<hr/>	
	\$40,371.59	
Increase market value, stocks.....	2,645.13	
Increase market value, bonds.....	30.00	
	<hr/>	
		\$43,046.72    \$35,710.42

*Investments*—The market value of the Association's stocks at the close of the fiscal year was \$22,997. This is slightly above their cost. During the year stocks amounting to \$4,968 were sold. The sales price on these stocks was \$1,233 above their cost to the Association. The Association holds government bonds with a value of \$9,745. The net worth of our organization at the close of the fiscal year—stocks, bonds, and cash—was \$43,046.72.

A detailed report on the Association's investments is being submitted by the Investment Policy Committee to the Executive Committee.

Respectfully submitted,  
(Signed) ASHER HOBSON, *Secretary-Treasurer*

Received by the Executive Committee and recommended for publication in the JOURNAL.

*Report of the Auditor*

In accordance with your request I have examined the accounts of the Secretary-Treasurer of the American Farm Economic Asso-

ciation for the year ending November 30, 1944. I have checked all entries against supporting vouchers and found them in agreement. The state of the assets of the Association I checked by examining the bank statements and checking the securities owned by the Association.

The books of the Association have been carefully, correctly, and efficiently kept and I certify that the financial statement made by the Secretary-Treasurer reflects the financial situation and the transactions of the Association as shown by his records.

Respectfully submitted,

(Signed) WALTER H. EBLING, *Auditor*

Received by the Executive Committee and recommended for publication in the JOURNAL.

### *Report of the Editor*

During the year the health of Dr. H. Bruce Price forced him to relinquish his duties as Editor of the JOURNAL and the new Editor was appointed in May. Prior to this appointment, the affairs of the JOURNAL were handled by Dr. Price's associate, Mr. Carl M. Clark. The Association is deeply indebted to Mr. Clark for the very able manner in which the Editorial Office was conducted during this trying and difficult period. He was responsible for the February and May issues and turned over to the incoming editor all of the material appearing in the August issue. The various records and papers connected with the Editorial Office were transferred promptly and in good order. The excellent summary of the duties and methods of handling the affairs of the office which was provided was of invaluable assistance. We were indeed fortunate to be able to rely upon as capable and willing a person at such a crucial period.

Volume XXVI has 876 pages. This is about 100 pages less than recent years. The material published included 42 papers, 16 notes and 29 book reviews. The division of printed matter was as follows:

Issue	Articles including discussions	Notes	Re- views	News Items	Annual Reports	Adver- tising	Other	Total
February	257	—	—	—	15	7	5	284
May	100	33	22	4	—	6	7	172
August	128	16	15	5	—	6	6	176
November	174	29	29	4	—	4	12	244
Total	659	78	58	13	15	23	30	876

There have been unavoidable delays due to slowness of the mails and difficulties encountered by the printers in turning out their work in their former time. There appears to have been a high degree of tolerance by all concerned and recognition that these difficulties are a concomitant of war.

Acknowledgment is made of the fine cooperation of the Editorial Council. Their advice on the suitability of manuscripts for publication and with respect to policy has been invaluable. Several have been active in stimulating the writing of articles and directing these to the JOURNAL. Acknowledgment is also due to the Assistant Editors and to the staff at the University of Minnesota for their assistance.

Uncertainties will continue to face the Editor in 1945. Will the transportation situation prevent a national and perhaps even regional meetings of the Association? Will the increased emphasis on the war effort curtail the number of contributions? Will the rationing of paper become more drastic and our paper quota become smaller? Will printing costs rise and membership decline necessitating a reduction in the size of the JOURNAL? These questions as well as others may demand an answer during the year and require a flexible and perhaps changing policy on the part of the Editorial Office.

Respectfully submitted,  
(Signed) WARREN C. WAITE, *Editor*

Received by the Executive Committee and recommended for publication in the JOURNAL.

#### *Executive Committee Action*

On an experimental basis, the editor of the JOURNAL OF FARM ECONOMICS is instructed to establish the procedure of selecting the outstanding article appearing in the volume of the JOURNAL issued during the year 1945 and in succeeding years; that the author of the article chosen be appropriately recognized at the annual meeting and be awarded an honorarium of One Hundred Dollars. This recognition is to be known as "The Distinguished Publication Award of the American Farm Economic Association."

In the absence of an annual meeting the president and his program committee are instructed to assume responsibility for the assembling of papers for the proceedings number of the JOURNAL OF FARM ECONOMICS.

It was the consensus of opinion of the members of the Executive

Committee that authors of Ph.D. theses in the field of agricultural economics be encouraged to submit to the editor of the JOURNAL OF FARM ECONOMICS for consideration for publication a summary of articles of their individual theses.

Warren C. Waite is appointed Editor of the JOURNAL OF FARM ECONOMICS for the year 1945.

In order to furnish transfer officers of corporations with the necessary evidence that the Secretary-Treasurer is authorized to transfer securities in the name of the Association, the following resolution is adopted.

*"Resolved, That the Secretary-Treasurer who is also Chairman of the Investment Policy Committee, be and is hereby authorized and empowered, for and in the name and on behalf of this Association to take any and all such steps, and to do any and all such things as may be necessary, required and appropriate for, or in connection with, the purchase, acquisition, acceptance, handling, pledging, sale, or other disposition of stocks, bonds, and other securities belonging to the Association or pertaining to its business, including the execution, and delivery for and in the name and on behalf of the Association, of any and all endorsements, transfers and assignments of certificates of stock, bonds or other securities standing in the name of this Association, either for the purpose of sale or transfer, and all such other steps and action as may be necessary or proper in connection herewith."*

In order to transact the necessary business of the Association in the absence of the usual business meeting held in connection with the annual meeting, the Executive Committee authorized the Secretary to defray in the name of the Association, travel and subsistence expenses, not otherwise covered, of members attending the Executive Committee meeting in Washington, D. C., February 2 and 3, 1945.

This action is to be submitted for approval at the next business meeting of the Association.

The Committee accepts a contribution of \$12,500 from an anonymous donor, to cover awards to be granted for the best papers submitted to the American Farm Economic Association on "Farm Price Policies." This contest is to be held under the sponsorship of the Association, and under the control of its Executive Committee. The Association allots from its funds, not to exceed \$2,500, toward the cost of administering this project.

The President and the Secretary are authorized to make such expenditures within this limit as they deem necessary. A statement of the expenditures is to be submitted to the Executive Committee at its next annual meeting.

# JOURNAL OF FARM ECONOMICS

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No. 2

## MAJOR SHIFTS IN WORLD AGRICULTURE

C. M. PURVES

*Office of Foreign Agricultural Relations*

**I**N WARTIME a nation's agricultural production, like all other phases of its economy, must undergo extensive change. The area of conflict in World War II as well as the restrictions to world trade have been much greater than in World War I. There also has been a more concerted effort to pool the food needs and resources of the Allies and their armies in order to save shipping space. As a result the adjustments to agricultural production in the different areas of the world have been much greater in this war and it is probable that the necessary postwar adjustments also may be much greater.

The shifts in agricultural production in most countries were made shortly after the war cut off foreign supplies. In European countries and the United Kingdom, the adjustments were made largely from 1939 to 1941, in the Americas and the Asiatic area changes were more pronounced between 1941 and 1943. In a few countries the trends of the early war years continued into 1944 and 1945. On the other hand, there were instances where the shifts in production of some products were found to be too great and changes have been made back toward the prewar pattern of production. A comparison of 1943 and 1944 production in the different areas of the world, however, with that in the years immediately preceding the war roughly measures the extent of the wartime shifts in agricultural production.

Because of the importance of an adequate food supply in wartime, most of the adjustments in agricultural production have been pointed toward increasing the output of food products. In countries where available crop land is scarce, such as Egypt, India and Japan the production of industrial crops was decreased in order that the output of food crops could be increased.

The production of industrial crops also has been restricted to some extent in other countries by the lack of transportation facilities for world trade. There are a few countries, however, which have continued to expand the production of cotton and other industrial crops, especially rubber, cinchona bark and other products essential to carrying on the war.

### *Wartime Changes in World Food Production*

The world's total food production, measured in caloric value of farm output, has increased since the outbreak of the war but the relative gain has not exceeded the estimated increase in the world's population. In North America, the farm production of food in 1943 and 1944 averaged 32 percent greater than in the 5-year period immediately preceding the war. During a corresponding period food production in South America increased 16 percent. In the Asiatic areas there were significant changes in the production of individual products but the over-all increase in food output was slight. On the other hand, production of nearly all types of products in western Europe and North Africa was below prewar and in Oceania production has been considerably reduced by droughts and shortage of labor.

These estimated changes in food production are based upon a study of wartime changes in production in 30 countries to determine the influence of the war upon the world food supply. These countries have about 60 percent of the world's population. Conclusions reached from an analysis of these countries were checked against changes in world production of 5 leading food crops which provide about 50 percent of the world's food supply in calories.<sup>1</sup>

In some of the areas not covered in this study, including the war-torn parts of the Soviet Union, occupied China and the Dutch East Indies, the decline in food production was probably greater than in some of the countries studied, but available data are too incomplete to measure it. On the other hand, there have been marked increases in food production in many parts of the world which could not be included in this study as well as in the production of minor products for which estimates of production are available in only

<sup>1</sup> See "Wartime Changes in World Food Production"—Office of Foreign Agricultural Relations, December 1944, for discussion of the problems of measuring food production in different countries and the reliability of available data for different areas of the world.

relatively few countries. Consequently, the study of the 30 countries is believed to present a reasonably accurate picture of the over-all food output on the farms of the world since the war began.

The level of food production in 1943 and 1944 is summarized by major geographic regions and by types of commodities in the accompanying table. The average production of 2 years was used to

WORLD FOOD PRODUCTION BY MAJOR GEOGRAPHIC REGIONS  
AND BY TYPE OF PRODUCT

Average of production in 1943 and 1944 as a percentage of prewar period<sup>1</sup>

Type of product	North <sup>2</sup> Amer- ica	South Amer- ica	Western Europe and North Africa	Middle East	Oceania and South Africa	South- ern and eastern Asia	All Coun- tries <sup>3</sup>
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
<i>Crops:</i>							
Cereals	128	94	98	106	70	103	105
Fruits and vege- tables	121	130	104	86	117	101	108
Edible oils	154	375	102	69	— <sup>4</sup>	114	125
Sugar	95	128	82	115	99	105	99
Total	127	115	97	100	78	104	106
<i>Livestock products:</i>							
Meat, poultry, and eggs	159	121	61	91	119	64 <sup>5</sup>	107
Dairy products	119	122	90	78	96	98	102
Total	142	122	74	86	109	91	105
Grand total	132	116	91	99	86	103	105

<sup>1</sup> Production measured in calories for 30 countries. The average of 1943 and 1944 is expressed as a percentage of prewar base. The prewar average differs slightly by countries because of lack of comparable data or in order to obtain a normal period of prewar production. For most countries the prewar average was 1933-37, 1934-38 or 1935-39.

<sup>2</sup> The high level of the index of production in North America results in part from the influence of the severe droughts of 1934 and 1936 on agricultural production in the base period. However, production of crops in 1943-44 averaged 11 percent more than in the relatively favorable year 1939, while livestock production was 27 percent higher and total production was up 18 percent.

<sup>3</sup> The countries included in the various regions are as follows:

North America—Canada, United States, and Mexico.

South America—Brazil, Uruguay, Argentina, and Chile.

Western Europe and North Africa—United Kingdom, Eire, Norway, Sweden, Denmark, Germany, France, Italy, Spain, Tunisia, Algeria, and French Morocco.

Middle East—Egypt, Palestine, Turkey, Greece, and Bulgaria.

Oceania and South Africa—Australia, New Zealand, and Union of South Africa.

Southern and eastern Asia—India, Unoccupied China, and Japan.

<sup>4</sup> Production insignificant.

<sup>5</sup> Production of Japan only, including fish.



measure shifts in production from the prewar period in order to minimize fluctuations resulting from unusual crop yields in an individual year. The most outstanding regional increase in food production occurred in North America with sharp advances in the output of edible oils, meats, and dairy products and significant increases in all other types of products. The greatest proportionate increase occurred in the edible oil crops of South America where an acute shortage developed after the Pacific war shut off supplies from eastern Asia and the East Indies. Among the individual countries the highest proportionate increases in production, measured in calories, occurred in Norway and the United Kingdom.

The changes in total production by type of product show a marked shift in the general pattern of agricultural output in the different parts of the world. In countries and regions that normally produce less food than they consume, western Europe for example, food crops have been increased while production of fodder crops and livestock were decreased. By shifting from animal products to food crops, these countries could more nearly meet the calorie requirements of their people from available agricultural resources. On the other hand, the surplus producing regions, especially North America, strongly emphasized the production of livestock products but the output of food crops increased almost as much as the output of livestock products. Therefore, it was possible to supply the overseas forces, the United Kingdom, and the Soviet Union with large quantities of animal products in processed and concentrated form with economy of shipping as well as maintain home supplies.

The amount of cereals used for food has increased more since the war began than the production of cereal crops as a whole. In many countries, a larger proportion of the wheat crop has been used for cereals. This was particularly true in the United Kingdom and other countries in western Europe. Also more coarse cereals have been mixed with wheat and rye flour or used in other ways as food in order to extend the available supplies of cereals.

The combination of fruits and vegetables into a single group is not entirely satisfactory, particularly for measuring the changes in production over a short period of time, as the supplies of vegetables can be increased much more quickly than the supply of fruits. Insufficient data are available to make a more detailed breakdown of these products; however, when measured in calories they provide a relatively small proportion of the total food supply. The wartime

increase in the production of fruits and vegetables, as shown in the table, largely reflects the expansion in the potato, sweet potato, mandioca and pulse crops. There has also been an increase in the proportion of the potato crop used as food, particularly in European countries. In the last two years production has been considerably below prewar due to poor yields, but the actual quantities used as food were only slightly reduced.

The increase in the world production of edible oil crops probably was considerably less than is indicated in the accompanying table. About one-third of the total supply of vegetable oils is normally obtained from Manchuria, the Dutch East Indies, and other south-eastern Asiatic areas and these areas were under Japanese control in 1943 and 1944. The loss of surplus supplies from these areas and the almost complete cessation of whale fishing were the principal factors which stimulated the marked expansion in oil production in the other parts of the world. While no quantitative data are available in the production of edible oils in the Japanese controlled areas, it is believed that there has been a substantial decline in output during the war.

The shifts in world sugar production in response to the war also are only partially reflected in the analysis of the 30 countries studied. While total sugar production in North American countries studied has declined during the war, this decline has been more than offset by the increase in Cuba and some of the other Caribbean Islands. In South America, most of the increase was in Brazil. Sugar production in western Europe has been reduced only about 18 percent from prewar levels but production in the Soviet Union and some of the other eastern European countries is believed to have been reduced even more by the war. In the Middle East the 15 percent increase in production was largely in Turkey and Egypt. The 5 percent increase in southern and eastern Asia largely reflects the increase of the sugar production in India and does not include the marked declines which are believed to have occurred in the Dutch East Indies and the Philippine Islands.

The sharp reduction in the production of livestock products in the European area is probably the most significant shift made in agricultural production in response to the war. Because of their greater dependence upon concentrated feedstuffs the numbers of hogs and chickens were reduced most. The cattle number, particularly dairy cattle, was reduced only moderately but milk production

has been reduced because of the lack of concentrate feeds. However, the sharp reduction in the production of livestock and livestock products in this area and the more moderate reductions in the Middle East and in Asia have been more than offset by the expansion of output in other areas where production could be measured and total production in the areas studied in 1943 and 1944 averaged 7 percent more than in prewar.

Even if allowance is made for the limitations of the statistics used in measuring the changes of food production by regions they clearly show that marked increases have occurred in some areas during the war years which have been offset in a large part by decreases in other areas. The net result has been an increase in the world's farm production of food but this increase is probably no more than sufficient to keep pace with the estimated increase in world population.

#### *The Probable Influence of Wartime Shifts Upon Postwar Agriculture*

Two dominant characteristics of the agricultural industry should be stressed before examining the wartime shifts in more detail. In areas where production is temporarily restricted there is the tendency for total output to return to normal. On the other hand, once production has been increased, the tendency is to maintain the increase. These tendencies were clearly shown after the last war.

Although agricultural production in Europe declined to only about 70 percent of prewar in 1919, it was back to prewar levels by 1925. In the decade before the present war, domestic food production in Europe was encouraged by increasing tariffs, by placing restrictions on imports, or by other types of assistance so that agricultural production at the beginning of the present war was at an unusually high level. The decline in production through 1944 was much less than in the last war, but the strain of war was apparent. During the past year much of Europe has been severely devastated and it now appears that damage to facilities for transporting, storing and processing agricultural products has been or will be much greater and more widespread than it was in the last war. This will, no doubt, greatly retard the rate of recovery in agricultural production. The speed with which European agriculture recovers also will depend, to some extent, on the final peace settlement and the postwar political situation in Europe. The significant point is, however, that a substantial recovery in production is probable, not only in Europe but also in the other devastated areas.

The characteristic of the agricultural industry to maintain expansion in output also was demonstrated after the last war when the expansion in agricultural production in Canada, Australia, Argentina and the United States was maintained despite the sharp drop in prices after 1920. Therefore, as the areas where production has been interrupted by the war begin their return to normal, it is doubtful if production in areas where expansion has occurred will be reduced appreciably, or at any rate for sometime.

### *Shifts in Production by Regions*

*North America:* Since the war began all of the countries of North America have greatly increased their agricultural production. In Canada and the United States, production has been stimulated by guaranteeing minimum prices by payment of subsidies and by other assistance programs. In Mexico and most Central American countries, the expansion has been largely in response to higher prices although the government has directed production toward most urgently needed products. The United States guarantee of a market for the entire crop of Cuban sugar was accompanied by an expansion in the acreage of sugar cane cut of about 40 percent.

Very few, if any, of the countries in this area were using their agricultural resources at full capacity when the war began. Moreover, the continent has been favored with better than average weather conditions during the war years. It is impossible to separate the increase in output in the United States and Canada between the influence of government aid, the response to higher prices and the favorable weather, but government aid probably has been more influential in directing the increase in production toward certain products than it has in stimulating an over-all increase in production.

In Canada, better than average yields maintained wheat production at about prewar levels in 1943 and 1944 despite a sharp drop in acreage. Most of the acreage shifted from wheat was diverted to feed grains which permitted Canada to increase its production of hogs, dairy products and eggs, in order to meet the increased demands of Great Britain and other Allied nations. In the two years, 1943 and 1944, production of hogs averaged nearly two and one-half times that of prewar, beef production was up nearly 40 percent, cheese production 40 percent and egg production 64 percent. No doubt there will be some shift back to wheat in the postwar

period providing a market is available for any additional quantities of wheat at satisfactory prices, but part of the expansion in the production of livestock and livestock products is likely to be maintained in postwar agricultural programs.

In recent declarations on postwar programs Canadian government officials have often emphasized the need for Canada to maintain a large volume of agricultural exports in postwar. Several government programs have been adopted to increase the quality of livestock products produced for export in Canada and to advertise the high quality of its products. As a step in maintaining exports, contracts have been made with the United Kingdom which assure Canadian farmers of a market for all of the meats, cheese and eggs they can produce through 1946.

The expansion in agricultural production of about one-third in the United States and the shift to oil crops, meat animals, and eggs is well known. The expansion of food production in Mexico has been about as great as in the United States and the percentage increase in oil crop production has been much greater. Edible fats are the principal food imports of Mexico and with the outbreak of the war in the Pacific, the supply of fats was largely cut off. Under government sponsorship the output of peanuts, sesame seeds and cacao beans has been expanded sharply and a larger proportion of the cotton seed has been crushed for oil. In 1943 and 1944 these products supplied more than three times as much edible oil as they did in the prewar. There has also been a sharp expansion in the production of vegetables for home consumption and for shipment to the United States while sugar production in recent years has been over 50 percent larger than it was in prewar.

*South America:* The upward trend in agricultural production in South America has been greater since the war began than it was in prewar years and no doubt, the increase would have been even more pronounced if machinery and other needed facilities had been readily available. There also have been marked changes in the trends of production of individual products. Before the war, South American countries were large exporters of grains, beef, wool, mutton and lamb, coffee, cotton, and tropical fruits and nuts. Large quantities of edible oils were imported and the continent as a whole was a net importer of rice. The blockade of Europe and the shortage of shipping, resulting from the war has sharply reduced the exports of grains, fruits, cotton and coffee, but there has been an active

demand for meats and dairy products, and in Argentina particularly, there has been a marked expansion in the production of these products. In 1943 and 1944 the production of pork products in Argentina averaged nearly three times as much as in prewar, mutton and lamb production was up 80 percent, cheese production doubled and butter production was up 50 percent. In Brazil also, there was a marked increase in the production of pork.

To offset the loss of olive oil from the Mediterranean area and vegetable oils from southeastern Asia, several countries greatly expanded the production of peanuts and sunflower seed and increased the quantity of cotton seed crushed. During the last 2 years, production of edible oil seeds in Argentina has been 4 to 5 times as large as in the prewar period and the percentage increase of these products in Uruguay has been even more phenomenal. In Brazil, vegetable oil production was expanded by crushing a larger percentage of the cotton seed crop. As a result of these increases, South American countries have not only met their domestic requirements but have been net exporters of edible oils since 1942.

An expansion in rice production has been general in all countries. Rice production in Brazil, the principal producing state, has increased nearly 50 percent since the war began. Some of the smaller countries have had much larger percentage increases, and the continent as a whole is now a net exporter of rice.

The outlet for coffee from South American countries has been restricted by the blockade of Europe but four successive short crops have enabled Brazil to dispose of a large part of her surplus coffee supplies. Cotton production in Brazil and Argentina has continued to expand and textile production in these countries has expanded sharply during the war years. They both are now exporting considerable quantities of textile products in addition to meeting most of their domestic requirements.

Many of these wartime shifts in South American agriculture have been very beneficial to the agricultural economy and will continue after the war. Several countries have been encouraging greater self-sufficiency in food products for many years and the war has accelerated such programs. It is probable that attempts will be made to maintain a large part of the total expansion which has occurred during the war as well as the shift to the production of livestock and livestock products. Special efforts are being made to improve the quality of products for export.

Several countries have experienced a marked expansion in industrial activity and mining during the war years which has been accompanied by increased domestic consumption of dairy products, meats and rice. This is illustrated by the sharp increase in the consumption of meat in Brazil. Before the war, Brazil was an exporter of beef. While production of beef has been maintained at near prewar levels and production of other meats has expanded, beef exports not only have been restricted but it has been necessary to ration existing supplies in order to prevent sharp price advances. The marked increase in Brazilian rice production also has been largely retained for domestic consumption.

*The United Kingdom:* The United Kingdom is the principal importer of food products and its post war policy on agricultural production will have an important bearing on volume of international trade in food products. During the war, agricultural production in the United Kingdom has expanded sharply, much more than in World War I. The full extent of the increase is difficult to measure because of the practice in the prewar period of importing both feeder livestock and feedstuffs and extensively using the land as permanent pasture.

During the war, the acreage in cultivation has increased about 50 percent. The importation of feedstuffs has been confined to the by-products of imported feedgrains and oil seeds and imports of feeder cattle also have been reduced somewhat. By using more of the home produced grains for food, expanding the production of potatoes, sugar beets, fresh vegetables and fluid milk and sharply reducing the production of meats, eggs, and butter, the gross output from farms of the United Kingdom, in terms of calories, has expanded about 45 percent. However, if allowance is made for the smaller imports of feeds and cattle, the net output of the United Kingdom farmers in 1943 and 1944 was about 70 per cent more than in prewar years.

As a result of the sharp increase in production, the proportion of food requirements furnished from home grown production increased from about 30 percent of the caloric requirements in the prewar period to more than 50 percent in 1943. It is maintained by farmers of the United Kingdom that the expansion to meet wartime needs has been carried beyond what appears desirable for a long-time program and some shift back to livestock production appears likely in postwar years.

The United Kingdom has not announced a definite long-time policy for postwar agricultural production. The government has maintained, however, that the expansion and improvement in British agriculture must be continued after the war. A four-year plan for agriculture has been proposed which includes assured prices for agricultural products through the crop years 1947-48. During this four-year period it is planned that the character of agricultural production will be changed to adjust the use of agricultural land to the production of foodstuffs which it is best fitted to produce and which are most required to satisfy nutritional needs.

*Continental Europe:* In the prewar years continental Europe, excluding Russia, also was a large net importer of food products. Imports, including food produced from imported feedstuffs, provided about 10 percent of the total prewar food consumption. With the blockade of Europe, foreign supplies of food and feedstuffs were largely cut off and European countries made such shifts in agricultural production as would provide a maximum of foodstuffs. Considering the general shortage of fertilizers, labor, equipment, and other essentials of production, the over-all farm output of farm products, in terms of calories, was well maintained. Production of meats and eggs was drastically reduced, and a larger proportion of the total output of crops was used for food. Because of the acute shortage of fats, special efforts were made to expand the production of oil crops.

In the two years 1943 and 1944, the total output of cereals for food in western continental Europe averaged about 92 percent of prewar, sugar crops about 77 percent, fruits and vegetables (mainly potatoes) 97 percent, and oil crops 105 percent. The total production of crops was about 92 percent of prewar, but the production of meats and eggs was only 60 percent while dairy products were over 85 percent of the 1933-37 average. The total farm output of all farm products was about 86 percent of the prewar average but the decline in total calories used for food was much less because of economies introduced in the processing and utilization of food products. For example, the milling extraction rate of wheat and rye in many countries has been increased from about 75 percent before the war to more than 90 percent.

Data are not available for measuring the changes in food production in the eastern European countries since the war began. Indications are, however, that the decline in production in Greece was



much greater than in western Europe whereas in other Balkan countries it was much less.

Most of the shifts in food production in European countries were made from 1939 through 1941. In the years 1940 and 1941, crop production in Europe generally was reduced by drought and livestock numbers had to be drastically reduced because of shortages of feed. While livestock numbers have continued to decline in some countries since 1941 there has been an increase in several countries, particularly Sweden and Denmark. During 1942 and 1943 there was relatively little actual fighting in continental European countries and production was relatively stable. However, since the early part of 1944, a large part of this area has been devastated by war. Production in 1944 was less than in 1943 and the increased devastation is likely to be reflected in still lower food production in 1945. In large areas many farmers have abandoned their farms, work stock has been slaughtered or driven off, equipment destroyed, and buildings burned by retreating or invading armies. Even in many areas where farmers remained they hesitate to continue normal production as bridges, roads and boats have been destroyed so that means of transportation for marketing farm products are not available. Moreover, the value of money is uncertain and consumer goods are unavailable so that there is little incentive for farmers to produce more than they need for their own use or can sell locally.

Until the means of transportation and exchange can be improved it will be difficult to enforce collections from farmers or to encourage farmers to expand production. On the other hand, shipping space for imports will be at a premium as long as the war in either area continues. This will increase the need for Europeans expanding food production as rapidly as possible after hostilities cease. There will also be a shortage of foreign exchange in European countries for the purchase of imports so that unless food products are furnished in the form of relief or extensive loans are made to those countries, a shortage of food is probable until they can again increase agricultural production.

Trade policies adopted after the war by European countries as well as by countries having agricultural products for export also will influence the trend of production of different farm products in European countries. Political boundaries established after the war and the type of reparation payments imposed upon the Axis nations likewise will influence agricultural production and trade for

several years in the postwar period. During the period of increasing self-sufficiency before the war, many countries encouraged the production of food products even when their production was relatively uneconomical. An expansion of foreign trade after the war might result in a considerable shift in production of individual products when compared with prewar. Regardless of the trend of output of different products, however, it is apparent that a significant expansion in food production is likely to take place as soon as facilities for production and transportation can be repaired.

*The Soviet Union:* At the height of the German invasion, about 40 percent of the more productive crop land of the Soviet Union was occupied by Germany. By the later part of 1944 all of the prewar Russian territory had been reoccupied and steps taken to repair the devastation caused by war. There is, however, a considerable time gap between liberation and the recovery of agricultural production. The shortage of draft power in the liberated areas is very severe. The number of tractors in the Ukraine decreased by almost 60 percent during the period of German occupation. Still, in the areas previously occupied by the Germans, about two-thirds of the prewar acreage was planted to crops in 1944. By the end of 1944 much progress had been made in repairing farm buildings, repairing farm machinery and reestablishing agricultural production in the occupied areas. Some factories have been converted to the manufacture of tractors and other urgently needed farm equipment. There was also some restocking of livestock from herds of the unoccupied areas but considerable time will be required to restore the severe livestock losses of the liberated regions. Despite the progress made in the past year, it is probable that several years will be required to expand production, particularly of livestock, to prewar levels. During this period at least, practically all of the agricultural products produced in Russia will be required for home use.

*Australia, New Zealand and South Africa:* The output of food products in the British Dominions of the southern hemisphere—New Zealand, Australia and the Union of South Africa—has been greatly affected by the war. During the first two years of the European war the demand for the export products of these areas was reduced because of the shortage of shipping space. However, with the outbreak of the Pacific war, the demand for Australia and New Zealand's food output increased sharply and supplies from South

Africa were important in reprovisioning ships engaged in hauling materials to the Pacific war zone.

When troops were stationed in the southwest Pacific, surplus food supplies in this area were soon exhausted and marked shifts in production were undertaken to provide troops with fresh vegetables, dairy products, and meats from Australia and New Zealand. The efforts to expand agricultural production in these countries, however, have been handicapped by the shortage of labor and unfavorable weather conditions. In 1943-44 total production was slightly below prewar and production in 1944-45 has been further reduced by a serious drought in Australia. Agricultural production in South Africa during the past two years also has been reduced by an extensive drought.

There is evidence that agricultural production will expand again in this area as soon as labor and materials needed for production become available. In New Zealand the labor shortage has been relieved somewhat in recent months by the release of some agricultural workers from military service. This was followed by a sharp increase in dairy production. Because of the great wartime need for livestock and livestock products, agricultural production in these areas has been directed toward expanding the output of these products. In Australia, farmers have been encouraged to increase pork production in order to use up the surplus supplies of wheat and during the past two years hog slaughter has been about 70 percent above prewar. The production of butter in Australia has declined since the war began, but cheese production has increased about as much as pork production. There also has been a marked expansion in the production of vegetables in some of the irrigated districts of Australia and processing plants have been established in these areas during the war period.

Both Australia and New Zealand are interested in maintaining a high level of livestock production after the war and have entered into postwar trade agreements with the United Kingdom. The agreement with Australia gives assurance that all exportable surpluses of dairy and meat products will be taken for a period of four years from October 1, 1944. Prices are subject to review at the end of two years at the request of either government. A similar four-year contract has been made between the United Kingdom and New Zealand providing for some increase in the price of meat and covering all New Zealand surpluses available for export.

*Asia:* About one-half of the world's population live in Asia, south of the Soviet Union, and the East Indies. While this area exports a large part of the tea, rice, edible oils, sugar, rubber, and silk entering into world trade, the amount exported makes up a very small part of the total agricultural production. Imports of agricultural products into this area also are relatively small so that this large population is primarily dependent upon production within the area. During the war years, production in this area has tended to average below the prewar level, particularly in the occupied areas. In the unoccupied areas of China, food production has been below prewar since 1939, except in 1944 when crop conditions were unusually good and total production was about as high as in any year since the war began. In Japan and Korea, there has been some decline in agricultural production since 1942 because of the shortage of labor and fertilizer and some further decline in production is in prospect for 1945. The fish catch in Japan also has been much smaller and food supplies available for consumption have continued to decline despite the large surplus producing areas under Japanese control.

Shifts in food production in China and India, in response to the war, have been minor and are not likely to affect the postwar food supply. India has expanded the acreage of rice and coarse cereals somewhat in an attempt to offset the loss of rice imports from Burma. Some expansion in food production possibly will occur in China and Japan when the war is over and fertilizer materials from foreign countries are again available. The production of rice, sugar and vegetable oils in the surplus producing areas under Japanese control is believed to have declined substantially since 1941, the last year for which data are available. However, these areas may be brought back to normal production within a relatively short time, once they are in a position to export their surplus products to the outside world.

*Postwar Prospects for Agricultural Production.* The wartime shifts in agricultural production and trade agreements already made which are likely to affect postwar agricultural production indicate that efforts will be made to maintain a large part of the increases which have occurred in agricultural output during the war. There also are indications that many countries which were important importers of agricultural products before the war will strive to maintain or to increase their agricultural production in order to conserve foreign exchange.

These major changes in the levels of production will no doubt create many problems in adjustment of production and trade during the postwar period. It is possible that the problems of adjustment will be further aggravated by a reduction in the present strong demand for agricultural products. The decline in military demands may be offset only partially by increased civilian consumption even if there is a sustained high level of industrial activity throughout the world, as the per capita consumption of many commodities by persons in the armed services is much higher than the consumption by civilians. This is particularly true of meats, and several other types of livestock products. There will also be increased competition by industrial products for such foreign exchange as is available which may reduce the demand for agricultural products in world trade. It therefore appears that during the readjustment period at least, surpluses of some products are inevitable. Unless consumption habits are changed materially in the postwar period, the greatest surpluses will probably occur in those products which have shown the most expansion such as edible oils, pork and eggs, and to a lesser extent, sugar and rice.

Although agricultural production may increase more rapidly than the population in postwar years, this may not necessarily lead to continued over production as the over-all level of food production will still be below the requirements necessary to provide an adequate diet for the world's population. In the prewar period there were several areas of the world where large portions of the population were under nourished and where the diet was poorly balanced. Consequently, whether or not we will be able to utilize a higher level of production in postwar will depend, to a large extent, on our ability to overcome the problems of distribution. If a more equal distribution of food products could be assured, agricultural production could be expanded substantially over present levels without creating surpluses.

## AGRICULTURAL PRODUCTION AFTER THE WAR

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**T**ODAY the war situation requires continued all-out effort in food production, but tomorrow food needs for war and war relief may begin to taper off. Then we shall need to make a transition from wartime requirements to peacetime market demands; and when that transition is completed, our supplies of food and fiber will need to find peacetime market outlets in this country and abroad. This discussion deals largely with the years beyond the immediate transition period, but obviously what happens between now and then will influence the situation in later years.

The beginning of the transition from war to peace in agriculture will find our production plant geared for high production, with farm products selling at high prices and net income to farmers nearly three times the level of the prewar years 1935-39. In 1944 the volume of farm production for sale and for use in the farm home averaged a third higher than in the prewar years 1935-39. We need to understand how this unprecedented increase came about in order to make an appraisal of the level of production we are most likely to have when the war is over, and to analyze the problems that may confront us at that time.

### *Wartime Increases Are the Joint Product of Several Factors*

Some comments on the wartime increases in production have implied that it is almost entirely due to favorable weather. It is true that, from a national standpoint, weather has been relatively favorable to farm production in the war years 1940-44. But a careful analysis of the factors involved indicates that not more than one-fourth of the increase in output can be attributed to better than average weather. This estimate includes an evaluation of the effect of larger feed and pasture supplies on livestock production, as well as the increased crop yields.

With allowance for average weather, farm production at the end of the war will be at levels 25 to 30 percent above the average of 1935-39. This means that other factors than weather explain most

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\* This statement presents only the author's personal viewpoint on the problems that are considered.

of the wartime increase in output. The more important ones are: (1) shifts from animal to tractor power, (2) increased use of fertilizer and lime, (3) improved crop varieties, (4) increased use of cover crops and other conservation practices, (5) pest and disease control, (6) better feeding of livestock, (7) shifting to more intertilled and more productive crops, and (8) a small increase in the area of land used for crops.

Farmers have combined these forces in their production programs, with the result that we have experienced an agricultural revolution that could not have been predicted from past production trends. Progress in the use of improved practices over a period of years had built up a potential production capacity at the outbreak of World War II that was harnessed by the driving force of the need for increased food, and spurred on by the financial and patriotic incentives to increase output.

A few concrete illustrations will indicate the departures from prewar standards. Use of commercial fertilizer plant nutrients in 1944 was 85 per cent higher than in the prewar years 1935-39. Application of lime nearly tripled in the same period. The acreage of winter cover crops was more than tripled, and other conservation practices made important contributions to increased yields. Adoption of improved varieties was an important factor. Hybrid seed increased corn yields in the Corn Belt nearly 20 percent.

The wartime shift to more intertilled crops, such as soybeans, peanuts, and corn, has resulted in a larger farm output. In many instances, however, the average yield per acre of the strategic war crops was lower than it would have been on the prewar acreage, because the additional acreage was on land not well suited to those crops, and grown by farmers who had little experience in producing them. The area in intertilled crops increased about 8 million acres from the average of 1935-39 to 1944. Total land used for crops increased about 11 million acres, with about an offsetting reduction in summer fallow, idle, and pasture land.

Ever since World War I, there has been a gradual shifting from grass hay to legume hay. When the result of this change is analyzed in terms of the increased quantity of digestible proteins in the total hay supply, it shows one of the most startling changes in the entire production picture. The pronounced shift to legume hay, and the moderate increase in hay acreage in the war years 1940-44, as compared with 20 years ago (1920-24) shows an increase of

nearly 75 percent in the total digestible proteins available from hay per animal unit of cattle and sheep.<sup>1</sup> This means that important progress has been made toward more adequate balancing of rations for roughage-consuming animals.

Despite the tightening of concentrate feed supplies during the past year, which caused a reduction in livestock production from the high levels reached in 1943-44, livestock output is still above prewar levels. Some of the increase has been achieved by feeding accumulated reserves of both domestic wheat and feed grains, and by the larger imports of grains. But in the feeding year ending October 1944, these two sources accounted for only about 10 percent of the total concentrates fed to livestock. Therefore, by far the larger proportion of the increase in livestock production has been obtained from current production of grain, hay, and pasture. Total consumption of high protein feeds in the war years has averaged 5 percent higher per livestock unit than in prewar years, despite the difficulties experienced in obtaining protein feeds. Better balanced feed supplies of both roughages and concentrates have added considerably to the livestock output.

One of the most important factors in increasing the output of farm products for market is the shift to mechanical power that has taken place since World War I. In the years since 1920, about 50 to 55 million acres of cropland (and many million acres of pasture) have been released from the production of feed for horses and mules on farms and in cities, and made available for production for the market. The shift to mechanical power on farms accounts for the major part of the increase in production for sale from 1920 to the beginning of World War II. In one sense this is not an actual increase in farm production, but rather a shift from producing power on the farm to buying power and producing additional products for the market.

Mechanical power and labor-saving machinery also contribute to timeliness in farm operations. Under certain weather conditions this becomes extremely important. Undoubtedly both corn and soybean yields were higher in the Corn Belt in 1943 and 1944 because farmers had sufficient power to plant and cultivate promptly after the late spring rains.

The record breaking farm output of 1944 was produced with 8

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<sup>1</sup> See Bureau of Agricultural Economics processed report "Changes in Hay Production in War and Peace," by Neil W. Johnson.



percent fewer workers on farms than in 1935-39. Furthermore, many of the workers in 1944 had less strength and skill than those normally employed on farms. If allowance is made for this factor, the effective labor force was nearly 15 percent smaller than in 1935-39. But, by working longer hours and more days per year, by taking advantage of mechanization and other improved practices, and because of the decreased amount of labor per bushel or per head as output was increased, the output for market per worker was pushed up to over 40 percent above prewar levels.

### *Wartime Increases Will Persist*

Analysis of the forces back of increased wartime production indicates that many of these factors will persist when the war is over. Some of them, in fact, will be greatly accentuated. Farmers will not want to work so hard, but more workers will be available. For at least two years after machinery becomes freely available for purchase, farmers are likely to buy new tractors and complementary equipment in greater quantity than ever before. This means that the rapid rate of mechanization that was experienced in the late 1930's is likely to be resumed, and even accelerated. Substitution of tractors for work animals may release 5 to 10 million acres of cropland by 1950. Crop yields may also be increased because of more thorough tillage and timely performance of crop operations.

In the war years commercial fertilizer has been used in areas and on crops where there has been little if any previous use. This means that many more farmers have had experience in using fertilizer under a greater variety of conditions, and it is reasonable to assume that they will want to continue using fertilizer at a high level. Use of commercial fertilizer increased 70 percent in terms of plant nutrients from the close of World War I to 1930. And the 1920's were not considered especially favorable years for farmers.

In a recent State and Federal cooperative study of production adjustments in the postwar period, committees of agronomists, economists, and other agricultural workers estimated the amount of fertilizer that it would *pay farmers to use under prosperity conditions*. A preliminary tabulation for the entire country indicates that in terms of total plant nutrients these estimates are approximately double the large quantity used in 1944, and almost four times the average consumption of the prewar years 1935-39. It should be understood, of course, that these estimates are not in terms of past

relationships between farm income and fertilizer purchases—even under prosperity conditions—but rather in terms of what it would *pay* farmers to use. Educational and other programs would be needed to close the gap between what farmers ordinarily would buy, and what it would pay them to use. Nevertheless, this estimate and past experience both indicate that we should not expect the influence of increased use of fertilizer to disappear when the war is over. Similar statements can be made with respect to lime, winter cover crops, and other soil conserving practices.

The longer time effects of adoption of improved varieties seem to have a tendency to level off, except for such startling innovations as hybrid seed corn. However, the possibility of similar developments in other crops should not be overlooked. For example, the Lincoln soybean seems to promise yields 20 percent higher than the varieties now in use. Of course, it is necessary to realize that higher yielding crop varieties also mean greater drains on soil fertility, which need to be compensated by better rotations and increased use of manure, commercial fertilizer and lime.

After the war some new land will be brought into production regardless of economic conditions. In fact, an increase of 4 to 5 million acres is indicated from the irrigation, drainage, and land clearing activities already under way, but unless development is greatly accelerated, new land will not result in a large increase in production.

On the livestock side, better breeding, especially of dairy and poultry, may result in small increases per animal, but more immediately important will be the effect of more abundant and higher quality feed supplies—concentrates, hay and pasture—and more progress in the feeding of balanced rations.

In this picture of forces pushing toward increased production after the war there are some offsetting factors. The wartime acreage of intertilled crops is larger than can be continued in systems of farming that will maintain or improve soil resources. Although a shift from corn and soybeans to small grains, hay and pasture results in some decrease in output in most areas, the necessary shifts in this direction will not greatly affect total output. There also will be need for restoring some land to permanent grass cover, and this too will tend to reduce output, but only to a very small extent.

A balancing of the forces pushing toward increased production after the war, against those that will tend to reduce output, indi-

cates that those operating on the increase side are much stronger than those on the decrease side. In fact, it seems possible that if farm incomes are fairly satisfactory in the immediate postwar years, production for market might push up to a level about 145 percent of the prewar average by 1950-55. If depression conditions are experienced and farm incomes are low, the forces tending toward increased output would be considerably weakened, but even so, some progress in improved practices would be made. It seems safe to assume that the level of output for sale and for home use would be about 135 percent of the prewar average, even under depression conditions.

Once the level of production has been increased it tends to remain high. In other words, although farm production is responsive to increased prices and income and to improved practices on the upward side, it is quite unresponsive to depression conditions on the downward side. This type of production response results from the nature of farming costs, and from the organization of the farming industry into family farms with their high proportion of fixed to variable costs. Once investments for capital improvements have been made in farming they constitute fixed resources that will be used almost regardless of changes in the price of the product. For example, the tractors and other farm machinery that are bought immediately after the war will be on hand to use for several years.

On the other hand, some improved practices, such as the use of commercial fertilizer, involve variable rather than fixed costs, and their use, as well as their influence on production, may vary with the price of the product. Therefore, the level of production in depression periods would tend to be lower than in prosperity to the extent that there are temporary decreases in the use of variable resources. However, this tendency might be entirely offset by farmers struggling to maximize net returns above their variable costs, as they did in the years 1930-33.<sup>2</sup>

Some writers believe that the postwar production level is likely to be considerably lower than these estimates indicate. Norton and Sauer suggest a level about the average of 1938-40, which would be 106 percent of 1935-39.<sup>3</sup> Their reasons for expecting lower than the wartime level of production are: (1) a large part of

<sup>2</sup> See *Farm Management Problems in an Era of Change*, 1940 Yearbook of Agriculture, pp. 492-495.

<sup>3</sup> "Will Wartime Agricultural Production Be Maintained?" *Illinois Farm Economics*, Nos. 114 and 115, November and December 1944.

the wartime increase was in livestock "of a purely cyclical character"; (2) the increases reflect a conjunction of favorable years, use of accumulated feeds, and reserves of power and labor; and (3) the increases have involved greater expansion in soil depleting crops than can be sustained over a period of years.

In terms of animal units of all livestock on farms (including horses and mules) the average number for the years 1940-44 is not quite as large as the average for the years 1915-19; and the increase from the previous 5-year period is only slightly larger for 1940-44 than for 1915-19. However, more feed was required for the livestock on farms in World War II because of significant increases in production per animal, especially of milk and eggs.

The years 1935-39 were a period of slow recovery from the liquidation of the drought years 1934 and 1936. The total number of animal units on farms was lower in 1935-39 than for any consecutive five-year period since 1910. Unless another severe drought is experienced, a postwar return to the extremely low levels of 1935-39 therefore seems quite unlikely.

The important change in the livestock picture since the last war is the drop in horse and mule numbers. With 15 million animal units fewer horses and mules than in 1919 there is feed for that many more units of livestock for the market. The recent drop in hog and poultry numbers will result in large carry-overs of feed that, with average weather, will constitute an incentive for later increase in livestock numbers. Postwar livestock production is most likely to be maintained at considerably higher levels than the immediate prewar years.

The other two reasons given for not expecting maintenance of wartime production levels have already been touched upon, but the effect of reserves of power and labor on postwar production levels deserves further consideration. With the mechanization we now have, and the increase that seems likely during the first two or three years after the war, nearly all farmers will have some unutilized capacity in terms of family labor, power, and machinery. This will result in pressure to increase the size of the business—sometimes by adding more acres to the farm—but if that is not possible, by producing more labor-intensive crops and livestock, by using more lime and fertilizer, and by adopting other improved practices that result in increased output per acre and per animal.

Another viewpoint on the level of postwar production runs in

terms of attributing most of the wartime increase to favorable weather and to extra efforts in production, which will subside when the war is over. Little hope is held out for increasing production per acre over a period of years. The conclusion drawn from this argument is that we shall need to add about 4 million acres of new cropland per year to maintain a constant ratio of 4 acres of cropland per capita of the United States population.<sup>4</sup>

After careful analysis of crop yields and weather conditions over a period of years Shepard concludes that: "In allowing for variations in the weather of past years it becomes apparent that during the last 20 years crop yields per acre have been rising at the rate of nearly one percent per year. Excluding the particularly rapid increases in yields of fruits and cotton, yields are now about 13 percent higher than they were in comparable seasons 20 years ago."<sup>5</sup>

Farm output for sale and for home use per capita of the total United States population (including members of the Armed Forces) was 24 percent higher in 1944 than in 1935-39. It was 11 percent higher per capita than the previous peak years, 1910-14, when we harvested a third more land per capita than in 1944. If allowance is made for better than average weather in 1944, production was still 5 per cent higher per capita of population than in 1910-14.

The point is that we have shifted from producing power on the farm to producing products for the market; and we have substituted other resources for land—commercial fertilizer, for instance. One example of the results of substituting other resources for land is a 1944 cotton crop 84 percent as large as in 1928-32 on less than half the acreage grown at that time. It seems doubtful that we need to worry about not having enough land to feed and clothe a larger population as long as we can achieve such large increases in production as we have experienced in the war period, without any significant increase in our land base, and with nearly a 15 percent decrease in the effective labor force.<sup>6</sup>

<sup>4</sup> "Why Irrigate More Land?" Address by Dr. John Lee Coulter at Thirteenth Annual Meeting of the National Reclamation Association, Denver, Colorado, November 16, 1944.

<sup>5</sup> "Prospective Crop Yields in 1945," *The Agricultural Situation*, February 1945.

<sup>6</sup> The writer believes that the case for some increase in irrigated land in the Western States rests on different grounds than the need for more land to increase food production. See "Irrigation Policies and Programs in the Northern Great Plains Region," *THIS JOURNAL*, Vol. XVIII, No. 3, August 1936.

*Improved Practices Mean Lower Costs as Well  
as Increased Volume*

It is apparent from the foregoing discussion that adoption of improved farming practices often results in increased production, especially of the volume of output that goes to market. When improvements result in increased marketable output they also are likely to cause lower farm prices unless demand for the product increases in proportion to the increase in production. In the first stage of adoption however, the farmers who have introduced certain improved practices retain all the benefits of lower costs and increased volume until, or unless, the increased output actually has resulted in lower prices. But after the price reduction has taken place, a part or all of the benefit may have been shifted to other groups. If the demand for the product is extremely inelastic it is possible that even more than the entire reduction in unit costs will be shifted to other groups in the form of lower prices.

Perhaps a more common longer time effect is that some of the marginal producers, who cannot adopt the improvement, shift into other lines of production; and those who remain in the field retain a part of the benefit of lower unit costs. The increased volume of output on farms adopting the improvement often makes it possible for them to retain a larger share of the gain. For example, a 20 percent decrease in cost per unit of a product may result in only a 10 percent increase in the total output that goes to market, and in less than a 20 per cent decrease in the price of the product to the farmer. He therefore retains a part of the benefit of the decreased cost per unit, which multiplied into perhaps a 15 percent larger output on his farm makes it possible to retain a considerable part of the benefit of the improvement.

Even if all of the decrease in unit costs were passed on to other groups in lower prices, the gain from the increased volume would be retained. An improvement that makes possible more output per acre and per animal usually results in large decreases in *cash operating expenses per unit* because the additional product can be handled without much additional labor and equipment. For example, on typical cash grain farms in the Corn Belt the volume of output increased about 30 percent from 1935-39 to 1940-43; and operating expenses *per unit* of output decreased about 10 percent,

despite an increase of nearly 18 percent in the index of prices paid by farmers for commodities used in production.

Farmers who have an opportunity to increase the size of the farm in acres as mechanized, labor saving practices are adopted are in a position to reap much larger benefits from improved practices. The net income available to the farm operator can be increased in this way, even though all of the benefit both from lower unit costs and increased product per acre is passed on to other groups in lower prices. This change, of course, increases management responsibility and also has some other effects that are discussed in the next section.

Not all improvements result in increased output. For example, a more efficient method of harvesting hay may only save labor in haying without resulting in the production of more hay. If improvements which do not have a tendency to increase output are adopted the price of the product will not be affected by their adoption. Therefore, the entire gain from such an improvement is likely to be held by farmers who adopt the practice. If some producers cannot adopt it, they will operate at a disadvantage in comparison with those who can benefit by adoption; but the actual level of their incomes will not be affected.

Since most improvements have a tendency to increase output, but some tend to lower costs without any significant effect on output, it is desirable to analyze their effects somewhat further by determining what improvements are *land saving*, *labor saving*, or *capital saving* in their effects. The improvements that are land saving in their effects have the greatest tendency to increase output. Those which are only labor saving or capital saving in their effects increase output only indirectly, if at all.

An improvement can be said to be land saving when its adoption results in increased output per acre or per animal. For example, the use of commercial fertilizer in many areas results in a large increase in physical production, and in value of output over cost of the fertilizer. Use of lime, winter cover crops, and improved crop varieties have similar effects. Adoption of tractor power releases land formerly used for producing feed for work stock, and is therefore land saving in its effect, but in a somewhat different sense.

The improvements mentioned as being land saving in their effects also tend to be labor saving in the sense that less labor is required per unit of product as more is produced per acre or per ani-

mal. Some improvements, however, are labor saving without also having the land saving effect that results from increasing output per acre or per animal. Among these can be mentioned all of the improved farm machinery, such as the combine harvester, corn picker, haying machinery, etc. All of the work simplification ideas that are now being developed come in this category.

But since these improvements are labor saving they do release time that can be spent on other enterprises, and this might indirectly result in increased output. On family farms this may mean pressure to increase the size of the farm in acres, or to build up the more labor intensive enterprises. Of course, if the labor released was hired by the day or on a piece-rate basis, the effect might be only to hire less labor. Even in that case a labor-saving improvement reduces the cost of the product to which it applies, and, therefore, makes its production relatively more profitable. In some instances this might result in shifting more resources to that enterprise; but the net result would not be a larger total product, unless the enterprise shifted into was more intensive than the one which was displaced.

If new land is available, that of course constitutes another way of increasing production of a product to which a labor-saving improvement applies. The plowing up of the Great Plains in the 1920's was largely the result of improved tractor power and adoption of the prairie-type combine harvester. But increasing production by the new land route is likely to be less important in the future.

Improvements are capital saving in their effects when they actually result in less use of capital for a given volume of production. For example, if a new type of combine harvester can be bought at a lower first cost than the machine it replaces, and it also requires a smaller outlay for operating expenses, it would be capital saving—both in its first investment and in capital outlay for current operation. Although most of the improvements in farming have had a tendency to require both a larger capital investment and larger current capital outlays on family farms, this tendency has not necessarily meant more capital for the same operation. Usually it has meant less capital per unit of product, providing the new machine or technique could be adopted on a scale that constituted a good fit in the existing organization. Quite frequently, however, the purchase of a tractor and tractor equipment has resulted in a high overhead investment in machinery for the existing size of



farm, and also in only partially utilized machinery and labor resources. This effect in turn results in pressure to increase the size of business—either in acres or by shifting to more intensive enterprises. If a larger business can be developed, and if the operator is capable of handling that larger business successfully, the result, as already mentioned, is an additional gain to the operator from the improvement. This raises the question of impacts of improvements on management.

### *Improved Practices Are Management Consuming*

Although machines and other improvements are *land saving*, *capital saving*, or *labor saving* in their effects, most of them also are *management consuming* in the sense that more management effort is required to operate a farm business successfully. Mention already has been made of the fact that often adoption of improved practices makes it possible for a farm family to operate a larger farm, but the larger unit requires more management than a smaller one if the operation is to be successful. This, of course, does not necessarily mean more management per unit of product, but it does mean that more is required per farm; and also that it takes a higher grade of managerial ability for successful operation of the size of farm that can be handled by a farm family from a labor standpoint. Improvements also require that farmers learn new skills, such as tractor operation. Once learned, they may be no more difficult to carry out than the old practices, but farmers who adopt a new practice or a new machine must be willing to learn the new and discard the old; and this requires an alert and open mind.

The farmer who possesses managerial ability of a higher order will be able to combine the use of improved practices in a larger business to obtain a much higher net income for himself and his family, and therefore to benefit considerably by adoption of improvements. For example, preliminary studies indicate that increasing the size of a Great Plains wheat farm to the acreage that a farm family can readily handle with prevailing sizes of tractor equipment results in about a 20 percent decrease in cost per bushel, even after making allowance for the larger land investment. Since the larger farm would have about 75 percent more wheat to sell the net income available to the farm family would be more than doubled.

On the other hand, the farmer who possesses only limited mana-

gerial ability may have to continue operating a smaller farm on which he cannot take full advantage of the new improvements. This means that the disparity in incomes between farmers of A and C grade managerial ability will be widened by the technological change.

The management consuming effect of improvements can be seen more clearly in historical perspective if we compare the relatively self-sufficing pioneer farming with present day tractor farming in the Corn Belt. The same contrast can be seen in geographic perspective by comparing the self-sufficing farms of the Southern Appalachians, or the cut-over areas of the Lake States, with our mechanized Corn Belt farms. The successful Corn Belt farmer must first of all decide on the right combination of the relatively complex resources used in production, and then on the improved practices necessary to obtain optimum results. For example, he will not get maximum benefit from the use of commercial fertilizer unless he uses hybrid seed, plants on time, and controls weed growth, etc. Using improved practices *in the right combination to constitute a best fit, and carrying through with such a combination* is what requires a higher order of management than on farms in the handicraft stage.

Use of such improved practices as tractor power, lime and commercial fertilizer requires a larger capital investment and also larger current operating expenses. This means that farmers become more vulnerable to losses from crop failure and from low prices. The added risks give increased importance to crop and income insurance as a means of providing stability of farm income.

Since improvements result in lower costs which usually are shared with other groups in the form of lower prices, it appears to be nationally desirable to provide crop and income insurance designed to reduce vulnerability to crop and livestock losses and lower prices. For example, tractor power and associated equipment, along with improvements in wheat varieties and in cultural practices, have made wheat production possible in the high risk areas of the Great Plains region. Most of these areas can be profitably farmed over a period of years if some means are provided for tiding over years of drought, and of low prices that result from economic depression. Crop insurance on wheat is part of the answer, but it does not deal with the losses incurred from reduced prices because of maintaining a high level of cash expenses in order to continue in

production. There are two ways of dealing with that problem. One would be to establish price floors that would give wheat prices greater stability, and the other to provide for supplementary payments in years of low prices.

Perhaps some program analogous to unemployment insurance could be developed whereby farmers would pay into an income stabilization fund in favorable years and draw on this fund in unfavorable years. A development of this kind might combine crop insurance and income insurance into one program.<sup>7</sup>

Government aid can stimulate adoption of agricultural improvements in many ways. It can also cushion the shock to those who are adversely affected by technological advances. Farm operators and hired labor no longer needed in agriculture because of adoption of labor saving practices need assistance in finding other employment. Under conditions of high employment some aid can be provided by establishing local employment and training offices in rural areas. Farmers who cannot adopt a given improved practice may need credit and management guidance in shifting to other enterprises.

Sometimes new practices can be readily carried out by farmers providing technical aid is available for the first introduction of the new technique; for example, laying out the lines for contour farming. The possibilities of rendering service to farmers in the national interest by giving assistance in adoption of improved practices appear to be so great that it would justify provision for a considerable amount of technical aid to farmers in farm planning. More detailed assistance on farm management problems in the adoption of improved practices can be provided by farmers themselves through the organization of cooperative management associations, but such associations need public stimulation and assistance in getting started.<sup>8</sup>

In some areas there will be many farmers who will need credit and other assistance in obtaining additional land in order to operate on an economic basis with mechanical power and other improved practices. Existing agencies can provide the credit needed, but credit for the new system of farming needs to be combined with

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<sup>7</sup> The recent report of the Committee on Postwar Agricultural Policy of the Association of Land-Grant Colleges and Universities, October 1944 (page 28), mentions the possibility of a program similar to this suggestion.

<sup>8</sup> See article entitled "For Farm Consultants," in *Land Policy Review*, Volume 4, No. 8, August 1941.

intelligent participation in management in order to work out and carry through long term farm plans that will maximize utilization of the resources available to the farm family.

Rapid improvements tend to make agriculture more dynamic. Therefore, a higher order of managerial ability is required to provision future developments. Although the more capable operators probably can benefit from rapidly changing conditions, the rank and file of farmers are likely to be in greater need of education and other assistance in adjusting to new situations. Nevertheless, net returns to farmers often can be increased more effectively by helping them to produce at lower costs than by attempting to maintain higher prices. And the result is more beneficial to society as a whole, providing other employment alternatives are available for those who are no longer needed in farming.

*Some Shifts in Production Will Be Necessary  
After the War*

If domestic industry and foreign trade is maintained at high levels after the war, farm production also can continue at or above wartime levels, with satisfactory incomes to farmers. But even under those conditions some changes would be required in certain lines. The changes, however, would consist largely of shifts to other enterprises, and of improvements in farm practices.

In the recent State and Federal cooperative study of Production Adjustments After the War, assuming conditions of agricultural prosperity, an attempt was made to estimate the changes in level and pattern of production, and in farm practices, that would maintain or improve the farm plant and be profitable to farmers over a period of years. Preliminary tabulations of this material show some interesting results. Although changes are suggested in specific enterprises, the total cropland and livestock numbers are about at 1944 wartime levels. However, the increases in crop yields and production per animal that are suggested would result in a level of production considerably higher than in 1944.

The suggested cotton acreage of 23 million acres is only 14 percent above the low level of 1944, but it is estimated that it would be profitable to maintain the average yield per acre at slightly over 300 pounds. That is only a continuation of the rapid increase in cotton yields in recent years. In the Delta area, for example, yields of lint cotton per acre increased about 80 percent from the 5-year

average 1928-32 to the 3-year average 1941-43. This resulted in more than a 20 percent increase in total production, despite a 32 percent decrease in acreage during the same period. If an average yield of 300 pounds of lint per acre actually should be achieved on the suggested cotton acreage, important questions would arise concerning potential market outlets, including questions of foreign trade and competition with other fibers in the domestic market.

The future holds not only the prospect of increased yield per acre, but also the promise of successful cotton harvesting machinery. The cotton stripper appears to be ready for large scale adoption in the Great Plains cotton areas. Adoption of the mechanical picker may come somewhat more slowly, but it also is quite definitely on the horizon. A 2-row mechanical cotton stripper, operating on farms where other operations have been mechanized in the Great Plains cotton areas, makes it possible to produce cotton with tractor equipment using only a little over 6 hours of labor per acre, or 15 hours per bale of cotton. If the 1-row mechanical cotton picker can be used successfully in the Mississippi Delta, along with other tractor equipment, cotton can be produced in that area with an average of 46 hours of labor per acre, or 52 hours per bale of cotton. This compares with average labor requirements of 141 hours per acre, or 160 hours per bale of cotton, with 1-row mule equipment and share cropper operations.<sup>9</sup> What effect will such a revolution in cotton production eventually have on sizes of farms and on the amount of labor that can be effectively employed on cotton farms? And what about shifts in competitive advantage of different cotton producing areas?

The postwar wheat acreage suggested under prosperity conditions is 62.7 million seeded acres. At the yields per acre estimated for average weather conditions this acreage would result in a wheat crop of over 900 million bushels. Obviously this would be more wheat than would be needed for domestic food consumption. Questions immediately arise concerning the desirability of continuing production of wheat for feed as well as for food—even at feed prices; also questions as to the probable size of our export market.

Wheat production in the principal wheat areas is now mechanized to a greater extent than almost any other farm enterprise. However,

<sup>9</sup> See pages 24 and 25 of Bureau of Agricultural Economics processed report entitled "Changes in Cotton Production in War and Peace," by E. L. Langsford. The Delta labor requirements will be even lower than those indicated if the flame cultivator can be adapted for use on cotton.

many farms in the specialized wheat areas have not been enlarged to take full advantage of economical operation with mechanized equipment. As already indicated, the modal size of the family wheat farm would need to be doubled in many areas in order to obtain a good fit with present mechanical power and equipment, and available family labor. In some areas the question of developing livestock enterprises as side lines to wheat production needs to be seriously considered. In still other areas the risk of crop failure may be so high that efforts should be made to restore the land to grass cover, and shift to ranching operations. But this involves much less intensive use of land and therefore much larger units; also a whole chain of adjustments in local institutions.

Rather sharp postwar decreases are suggested in all three of the important oil crops—soybeans, peanuts and flaxseed. The outlook for the oil crops is intertwined with the kind of trade relations that are developed with other nations, and the restoration of oil enterprises in the tropics. However, it is important to remember that the oilseed meals constitute most of our high protein livestock feed. The present value of soybean meal is somewhat higher than the value of the oil from a bushel of soybeans. Consequently, the meal may be regarded as the main product rather than the by-product. Perhaps soybeans fit into farming systems in the more level areas of the Corn Belt sufficiently well to retain a fairly large soybean enterprise—one that will have competitive advantage in production because of its place in the rotation, and because it can be produced in the midst of an important oilseed meal consuming area.

A much larger acreage of the peanuts grown in the South will be hogged off after the war than was true in the prewar period. We may also retain a larger peanut enterprise to supply the edible trade.

Among the feed crops a 10 percent decrease in corn acreage was suggested, with some offsetting increases in oats and barley, and maintenance of the grain sorghum acreage. Tame hay would be increased considerably to provide forage for a high level of roughage consuming livestock. This change also is consistent with the basic principle of maintaining soil resources.

It is suggested that, with prosperity conditions, meat animals as a group should be maintained at somewhat higher levels than represented by 1944 production. The number of cattle and calves on farms and ranches would be slightly larger than the high level of 1944. In this connection it should be recalled that the decrease

in horse and mule numbers since 1919 has made room for 15 million additional animal units of productive livestock, without increasing the total feed supply. A high level of consumer purchasing power would be needed, along with some export markets for a part of the pork production, to find a profitable market outlet for such a high level of meat animal production. However, wartime experience demonstrates how demand for meat increases when the national income is high, and widely distributed.

The suggested milk production is nearly one-fourth above the 1944 level. This increase would be achieved by maintaining 9 per cent more milk cows, and also by significantly increasing production per cow. This quantity of milk is about what would be needed to provide adequately for all of our domestic consumers at the level which nutritionists estimate would be desirable in a "high level prosperity diet."<sup>10</sup> Here is a challenge for those concerned with consumer education; also for those in a position to facilitate the marketing of dairy products. It is recognized, of course, that high level, widely distributed purchasing power is needed in order to increase milk consumption substantially; also that other means of distribution are needed for low-income people even under those conditions; and for special groups, such as for children in school lunches. But granting these conditions, how rapidly could we move in the direction of a nutritionally desirable level of milk consumption?

Can we utilize the new developments in the manufacture of whole milk and non-fat milk powders, ice cream mixes, and new techniques in cheese making to increase considerably the total outlet for dairy products? It should be possible with the right kind of nutrition education, and with a courageous price, marketing and distribution policy to close most of the gap between the present level of milk consumption, and a level that is nutritionally desirable. By and large the adjustments indicated as profitable to farmers under prosperity conditions in the postwar period also would achieve the twin objectives of high-level nutrition and conservation of soil resources. There would be relatively less emphasis on inter-tilled crops and on cash crops, and more on dairy and other roughage-consuming livestock; which means more close-growing crops

<sup>10</sup> See "Production Adjustments—1945 and Post-War," address by the writer at 22nd Annual Outlook Conference, Washington, November 14, 1944. Mimeographed by the Bureau of Agricultural Economics.

and hay and pasture. Adjustments in this direction also tend to minimize the pressure of production increases on market outlets.

*Trial Balance of Potential Production and Prospective  
Market Outlets Is Needed*

It should be distinctly understood that the level and pattern of production discussed in the preceding section was developed by estimating the amount of each product in relation to other products that it would be profitable for farmers to produce under prosperity conditions. The estimates, therefore, constitute a part of a trial balance that needs to be compared with prospective market outlets under comparable conditions before a desirable basis for post-war production can be developed. Although an analysis of potential market outlets is outside the scope of this paper, the following observations are ventured.

If domestic industry and foreign trade can be maintained at high levels in the postwar years, the total volume of production estimated as a profitable level under prosperity conditions probably could be disposed of at satisfactory incomes to most groups of producers. The indicated profitable response in some lines, especially cotton and wheat, call for further analysis and balancing with market outlets. But under conditions of national prosperity this would involve largely shifts from one enterprise to another. Such adjustment problems are manageable, *provided other production alternatives are available*. Surplus production in one commodity can then be remedied by encouraging producers to make positive shifts to the production of other products. In areas where other alternatives are limited it may be possible to render assistance in reducing costs to meet the lower price situation that results from increased production, and to find nonfarm employment for farm people who cannot obtain adequate incomes in agriculture.

However, if the total volume of production of agricultural products is too large for the prospective market only two possible remedies are in sight. One is larger markets, and the other is shrinking the size of the farm plant. With ever increasing efficiency in farm production, shrinking the size of the farm plant effectively means reducing the number of workers employed in agriculture. That is possible only under conditions of prosperity, when other employment opportunities are available. If farmers have to face a postwar world of chronic depression, the food supply is certain to



press heavily on available markets, and any tendency to reduce production by using less of the variable production resources probably will be more than offset by a larger number of farm workers seeking employment in agriculture.

Since total farm output is likely to be maintained almost regardless of economic conditions, farmers cannot afford to price themselves out of potential markets. Farm products will need to be priced at levels that will increase market outlets both at home and abroad. Benefits from improved practices will have to be shared with other groups in the form of lower prices. But cost reductions and increased volume that come with improved efficiency are not adequate protection to farmers from chronic depression and shrinking markets for farm products. Other measures are needed to cope with depression conditions. Shifts in production would be called for more than ever under those conditions, but changes from one product to another cannot bring about recovery of farm incomes in depression years. Providing food enough for health to those with inadequate incomes would help a little. But farmers cannot be prosperous unless there is a large market for farm products, both at home and abroad. Means can be devised for cushioning the shocks from travelling over a short depression detour, but over a period of time farmers cannot travel the high road of prosperity unless the entire national economy stays on that road.

## POSTWAR AGRICULTURAL CREDIT PROBLEMS AND SUGGESTED ADJUSTMENTS

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TWO assumptions must be made regarding postwar land ownership and agricultural tenure if any discussion of credit needs in that period will be most meaningful. They are: (1) Fee simple ownership of land will continue to be the predominant type of ownership, and (2) Owner-operation will continue to be the predominant pattern of tenure.

The assumption of continued fee simple ownership, as the predominant pattern, does not imply the same unrestricted freedom in the use of privately owned land which our forebears knew in the nineteenth and early twentieth centuries; it is recognized that various restraints upon the use of private land will persist which have developed since a conservation conscious nation became aware of the social value of wise land use. Indeed, such restraints will probably increase in number and scope. However, they need not, and probable will not, interfere with the basic right of a fee simple owner to transfer title to whomever and in whatever manner he chooses. Nor will such restraints on land use seriously affect the utilization of credit to implement the transfer of land ownership. On the other hand, they may necessitate modifications in the extension of credit for production. The second assumption—namely, that owner-operation will continue as the predominant pattern of tenure—implies neither increase nor decrease from present levels of tenancy. A minimum amount of tenancy is desirable and necessary as a step on the road to owner-operation.

In this paper separate treatment will be accorded a number of facets of the post-war agricultural credit problem. The discussion will be neither exhaustive nor definitive, but will serve chiefly to raise issues which should be resolved if future credit needs of agriculture are to be served soundly and efficiently.

### *Another Land Boom?*

Ever since the war began, an almost unbelievable quantity of thought and discussion has been devoted to prevention of the "coming farm land boom." Much of this was premature. It induced conservatism among many lenders too early in the inflationary sequence. As year adds upon year with still no sign of the threatened

deflation, it becomes increasingly difficult for many lenders to maintain conservative lending policies. Keen competition for the dwindling farm loan business further aggravates this situation. The necessity for many individual lenders to maintain loan volume or drastically curtail their services will likely push additional lenders into the "inflationary" lending group.

Happily, total farm indebtedness in the United States has decreased markedly since the war began, contrariwise to the movement during World War I. How much longer this trend will continue is problematical. The return to rural areas of veterans and war workers who desire to farm will likely increase the number of farm transfers from owners who are at or past retirement age and who have accumulated sufficient savings during the war to give them added security in retirement. This group of buyers will need and use credit. As a result, total farm indebtedness, both real estate and operating, may be expected to rise for a period following the war's end. In spite of all efforts to the contrary, an increasing number of individuals will assume debt obligations beyond their long time debt-repayment capacity. This will be especially true if high prices persist for a period after the war, a not unlikely development. This will place a strain upon the solvency of rural areas and rural financial institutions, with the advent of more normal post-war cost-price relationships.

The effectiveness with which agricultural credit needs may be serviced after the war will be a function, in part, of the extent to which unwarranted debt commitments are avoided in the years just ahead. It will be in the immediate future that lenders, farm leaders, and agricultural educators should strive to minimize the creation of insoluble debt situations. Means of doing this have been adequately discussed elsewhere.<sup>1</sup> It will suffice here to direct attention to the timeliness of their application now and in the immediate future.

### *Definition of "Credit" is Needed*

Since 1933 in particular there appears to have developed considerable difference of opinion as to what the term "agricultural credit" actually means. The broad expansion of federal and quasi-

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<sup>1</sup> For example, see M. M. Regan and Fred A. Clarenbach, *Emergency Control in the Farm Real Estate Market*, this JOURNAL, Vol. 24, No. 4, Nov. 1942, pp. 866-882; Wm. G. Murray, *Land Market Regulations*, this JOURNAL, Vol. 25, No. 1, Feb. 1943, pp. 203-213; and C. H. Hammar, *A Reaction to Land Value Control Proposals*, this JOURNAL, Vol. 25, No. 4, Nov. 1943, pp. 822-834.

federal lending agencies into and beyond the periphery of "sound" agricultural lending, making loan advances under the nomenclature of credit, has substantially diluted the traditional meaning of the term. For example, when a loan is made to a farmer at a rate of interest insufficient to cover actual loan servicing cost, interest on the funds used in making it, and a reasonable margin for possible losses, that loan begins to take on the characteristics of a partial grant. In similar manner, when the credit of an individual is supported completely by a guarantee on the part of the Federal Government, as in the case of CCC loans, there is a substitution of the credit of the latter for that of the former. In neither case is it anticipated that the borrower will bear all the costs involved in extension of the "credit." Such operations would be impossible without the substantial and continuing underwriting by the Federal Treasury.

Considerable misunderstanding and not a little criticism have at times surrounded the so-called "sound" credit agencies of the Farm Credit Administration because of the "soft" credit extended by other governmental agencies. A non-discerning public fails to distinguish between the two classes of lenders, particularly when both profess to extend "credit." Likewise, the so-called "soft" credit agencies have frequently been criticized for "making bad loans" which it was never intended would be completely self-supporting or would even completely pay out. The public, and sometimes the lawmakers, did not understand that the primary purpose of such "loans" was something other than extension of credit in the traditional sense.

It would serve public understanding and legal definitiveness if the term "credit" were reserved for the loaning of money where the interest rate and other charges were sufficient to cover all costs, including a calculated risk of loss. Loans which patently cannot be self-supporting, even if the borrower should meet all his contractual obligations, should be designated differently. Included in such loans are rehabilitation and tenant-purchase loans of the FSA, seed and feed loans, and RACC loans. Non-recourse loans extended to farmers for the general purpose of market stabilization, such as CCC loans, probably should not be called "loans" in the first instance. Before wartime price advances, a large share of such loans were nothing more than outright sales to the government at the time the "loan" was made. This will probably be true again following the war.

*How Promote Farm Ownership With Sound Credit?*

A still unsolved but fundamental problem in agricultural credit is the development of a satisfactory substitute in the financing of farm ownership and operation for the stock share financing used in corporations. In other words, the problem is to bridge the gap between the 50 or 60 percent loan acceptable as security for a bond issue and the 10 or 20 percent of capital owned by the farm operator who desires to purchase his farm. Tenant-purchase loans of the Farm Security Administration are not the answer, as they patently are not self-supporting. Moreover, although they have apparently been effective in their limited way, they have been operative only during a period of generally rising real estate values and their long time efficacy is not known. In the long-term credit field the second mortgage is about the only device that has been offered to bridge this gap, but it has not proved satisfactory, particularly as a means of tapping the more stable and dependable fund sources of the central money markets.

FHA loans to home builders apparently have solved this problem in the urban residential mortgage field. Even though one may argue that the one-half percent insurance fee charged on FHA loans may be below the long time actuarial rate, the principle behind those loans is evidently sound. It provides a mechanism whereby home purchasers with limited capital, through payment of an insurance charge in addition to the interest cost, may enjoy the security of home ownership long before they have accumulated the traditional "fifty percent." Critical and detailed analysis should be made of the activity of the FHA in insuring mortgage loans to appraise that experience, in the light of conditions existing in the agricultural lending field, to the end that deserving farmers may have access to some mechanism which will permit them to borrow with substantially less than 50 percent equity. The need for such analysis exists despite the lack of strict comparability between the financing of the urban home, on one hand, and that of the rural home and business combined on the other hand.

The typical farm is refinanced every generation, sometimes oftener. Its fortunes rise and fall with the financial status of its individual owner. Under less favorable price relationships than those now current, large numbers of good farmers spend the best years of their lives trying to get on top of sufficient equity to "purchase a mortgage" on a farm. If they had been able to acquire title

to the farm earlier in life although with somewhat less equity, the added income which would have accrued to them as owner of the farm they operated would have facilitated the unencumbered ownership of their farm at an earlier age. Likewise, it may be argued that the deserving young farmer would benefit in many cases if he were able to finance his operating capital and equipment with substantially less equity than is now typically required.

The dangers and disadvantages of low-equity financing must not be ignored when espousing the position outlined above. A substantial equity in mortgaged property has often enabled a borrower to ride through temporary periods of financial distress when other borrowers with less equity were facing foreclosure. Likewise, the borrower with a sizeable margin of equity is frequently able to manage his business more effectively than can heavily indebted farmers because of the more flexible nature of his capital resources, particularly operating capital. The above advantages of high-equity financing can be at least partly maintained in low-equity financing of qualified young farmers through certain adjustments in terms of the typical loan contract. Flexible but realistic repayment schedules will assist large numbers of such borrowers through temporarily unfavorable seasons or years. Relatively lower amortization requirements in the early part of the loan, with option of additional payments as desired, will permit more rapid accumulation of operating capital with its resultant added flexibility of management. It might even be practical in some cases to amortize a loan over a period of say 20 years, but to set aside say one-half of the amortization payments for "insurance" so that payments could extend over 40 years if necessary without the loan becoming delinquent.

Before we can effectively embark upon a program of low-equity farm financing through some scheme of mortgage insurance, we need to know much more about how farmers do and should use their total capital, including credit. The whole proposition of the use of capital by farmers has never been very effectively explored. After all, the majority of capital used in agriculture is not borrowed; it comes largely from retained earnings either by present operators or former operators from whom it was acquired by inheritance or other family arrangements. In our present state of knowledge it would be difficult to set up an effective plan for farm mortgage insurance on an actuarial basis. We need better answers to such

questions as how capital is accumulated in agriculture. What factors cause its depletion? What is the trend in net capital accumulation in the agricultural industry? What is the relationship between capital accumulation and depletion and the tenure pattern? Under what conditions should farmers increase or decrease the amount of capital in their business? How do investment opportunities vary among regions and types of farms? What are the variations in equity requirements for prudent operations among regions and types of farms? We also need a more thorough understanding of the risks involved in all kinds of agricultural lending under various geographic and economic conditions. Research should be undertaken promptly which will attempt the systematic accumulation of such information.<sup>2</sup> It will then be possible to minimize the mistakes that must inevitably be made if and when farm mortgages insurance is undertaken on an extensive basis following the war. We should then know more about the effective use of reserves by both borrowers and lenders as a buffer against temporary difficulty. It will then be more nearly possible for both lenders and borrowers to participate in low-equity mortgage financing to their mutual advantage.

The establishment of a sound scheme for low-equity mortgages given by capable young farmers would strongly implement the power of credit to promote farm ownership. Although it has always been contended that a primary function of the Federal land banks was to extend credit for the purchase of farms by farm operators, the banks in practice have operated chiefly as a refinancing agency rather than as an initiating agency. Statutory loan limits rendered them unable to meet the credit requirements of large numbers of new farm owner-operators. The operations of the land banks have turned around refinancing of mortgages for so long that the fundamental dynamic function of the banks has been largely lost. For much the same reason insurance companies were likewise unable to serve this group of borrowers. Either the potential farm purchaser had to continue as a tenant while he awaited the accumulation of the required equity, or he borrowed from an individual, often the seller, in order to acquire title. Borrowings of the latter kind frequently involved junior mortgages, short maturities, high

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<sup>2</sup> The Financial Research Program of the National Bureau of Economic Research contemplates sponsorship of such a research program, in cooperation with the lending agencies, BAE, and agricultural colleges.

interest costs, and the like. To the extent experience and competent analysis indicate that low-equity farm financing may be insured as a calculated risk, it should be possible to pledge high percentage insured farm mortgages as collateral for bond issues. Credit could then be used on a self-supporting and self-liquidating basis to facilitate transfer of fee simple ownership to qualified operators at an earlier age than is now possible.

### *Needed Adjustments In Credit Terms*

Much progress has been made in the last dozen years in the matter of adjusting the terms of agricultural loans to the peculiar requirements of the agricultural industry. For example, in the case of real estate mortgages, the term of the typical mortgage has been extended to 20 or 30 years; the principle of amortization is widely accepted and used; interest costs have been lowered, particularly in areas remote from financial centers; loan fees have been reduced substantially and in many cases eliminated entirely; and the use of pre-payment funds as a reserve against "rainy days" is finding wide acceptance. The most noteworthy improvement in the area of farm production credit has probably been the shift in emphasis from security to ability to repay as a basis for extension of credit. Along with this shift has come the budgeted loan, under the terms of which a borrower may have his money advanced to him as he needs it and may repay the loan as income becomes available. Interest is charged only during the time the money is actually in use. Substantial improvements in production credit available to farmers have been made during the past decade by both production credit associations and banks.

On the other hand, not every recent change in credit terms has been for the good. The growing proportion of agricultural credit held by non-resident lenders has inevitably resulted in a certain stereotyping of the pattern of loans available to the individual borrower. The local lender, personally acquainted with the individual needs of his borrower, is able within limits to adapt the terms of his loan to those individual needs. The non-resident institutional lender can do so only with difficulty. In the latter case there is a tendency for lending policies and terms formulated in the home office to be applied with considerable inflexibility at the field office level. Non-resident lenders should make themselves aware of the needs of farmers for individual adaptations in loan terms, in order



that they may better integrate their lending facilities and services with existing need. This calls for added research on the part of agricultural colleges, lending agencies, and other research bodies. The need is not so much to know *how* farmers are using credit, but rather how they *should* use credit in order most effectively to serve their farm operations and financial growth. Entirely too much recent research has been of the former variety. There appears to be no valid reason why non-resident lenders cannot differentiate their loans sufficiently at the local level to meet the individualized needs of the borrowers, if information can be assembled to indicate the different credit needs that should be served and if dependable and responsible local agencies can be developed.

The possibility of more extensive use of the variable payment plan needs further exploration. The plan admittedly has its limitations. Experience has demonstrated that borrowers like it better in years of small payment than in years of heavy payment. The lender obviously prefers a loan contract with definite terms. Yet one who is genuinely interested in the improvement of agricultural credit cannot summarily dismiss such a device as the variable payment plan simply because it has not worked too satisfactorily in its limited application to date. It should be studied carefully in order that its defects may be remedied and it may become the means of assisting borrowers through periods of temporary financial difficulty.

The whole question of credit costs needs study. This includes not only the geographically uniform interest rates of the governmental and cooperative lenders, but also the question of fees charged for different kinds of service on loans of varying magnitude. Most students are in agreement that the geographically uniform interest rates of governmental and cooperative lenders are not economically sound. However, it is a matter of political realism that they cannot be other than uniform. On the other hand, there is considerable opportunity to vary net loan costs through the charging of closing fees, service fees, appraisal fees, and the like. In the case of cooperative lenders, further opportunity for cost differentiation exists in the payment of dividends by those local units whose operating costs and required reserve accumulations are below total charges to borrowers. The opportunity for cost differentiation of this character is greatest in the case of short-term loans which turn over frequently. It would be helpful if a body of information were de-

veloped showing the total net cost, including risk of loss, involved in agricultural loans of various amounts, maturities, purposes, and in different regions. It would then be possible for lenders, both public and private, to graduate costs charged borrowers in such a manner as more nearly to place their total credit operations on a self-supporting and a self-liquidating basis. Analyses of the kind suggested here would necessarily include a study of lenders' costs, within the institutions themselves, as well as such items as acquisition cost, servicing cost, and risk of loss.

### *Credit for Part-Time Farmers*

There is considerable evidence that many legitimate credit needs of part-time farmers living near industrial areas are not being met. This group of individuals, living and operating as they do in the intermediate zone between farmers and urban workers, have become numerous in important areas during the last 15 years. They will probably become still more numerous in the years immediately ahead. Their agricultural operations are typically of such a size that the land banks and insurance companies hesitate to accept them as an agricultural credit risk. Likewise, although they are technically eligible for FHA insured residential loans, makers of such loans are often hesitant to lend money on rural developments of this character about whose future value they are less certain than that of urban residences. Moreover, the urban worker who purchases a small agricultural tract in the country primarily for residential purposes frequently needs more credit than can be extended on security of the residence alone. At the present time the credit needs of part-time farmers are not adequately met by any Federal or cooperative lending agency. In some cases local bankers are making an effort to serve this area. However, their coverage is spotty. A small number of life insurance lenders are making preparations to solicit loans among part-time farmers, but they are necessarily proceeding cautiously.

Additional information needs to be developed regarding the financial characteristics of part-time farmers in different parts of the country. We need to know more about the opportunities in this development for economy in living, supplementation of urban income through the production of food for home consumption and for sale, the degree of stability needed in urban income to insure success of the part-time farming venture, and related items. When

such information becomes available, both local lenders and non-resident institutional lenders may be expected to adapt their operations in order better to serve the credit needs of this growing group of people.

### *Credit for Improvements*

Credit facilities for the financing of land improvements need to be modified. This would include credit for such things as buildings, tiling, soil conservation, forest holdings, and the like. Under existing practices it is very difficult for institutional lenders wisely to extend credit for such purposes, as not enough is known concerning the productivity of improvements. It is frequently true that investment in certain types of land improvement may bring a considerably greater return on investment than the original investment in the land itself, and may, therefore, markedly increase the safety of an original loan on the farm. At present nearly all types of lenders are hesitant to re-open a mortgage and extend additional credit for such obviously desirable improvements as drainage, liming, new buildings, fencing, and the like. In many cases where a mortgage already exists on the farm, about the only way additional credit may be obtained for such improvements is through a complete refinancing of the mortgage. This is both costly and troublesome. An arrangement needs to be developed under which qualified borrowers may receive additional advances from the mortgagee, without rewriting the mortgage, for the purpose of making improvements which are clearly desirable.

It is possible that we may need to revise our whole concept regarding loans for improvement purposes, especially now that the United States is so markedly a capital surplus country as compared with its capital deficit position of a few decades ago. It may be desirable in the more stable agricultural regions of the country to have long-term loans at low interest rates with little or no amortization, in order to encourage the improvement of farm homes and the improvement of farms generally. Amortization payments could then go into the improvements themselves rather than into the reduction of principal. Such an arrangement would not be unlike the corporate practice of operating indefinitely on borrowed capital, so long as improvements so financed yielded a rate of return substantially in excess of interest cost. This type of financing for rural improvements, used wisely, should result in a higher standard of rural living.

*Low-Income Farmers*

The financing of low-income farmers has been one of the most complex problems in agricultural finance during the last dozen years. Its solution is still not apparent; nor will the problem be any less pressing in the postwar era. With something like 50 percent of all farmers producing only 10 percent of all commercial farm products in this country, it is evident that large numbers of farmers must perforce be so limited in their scope of operations that there is little hope for their having sufficient income to enjoy a generally satisfactory standard of living. Moreover, it will be difficult to divorce from the financing of low-income farmers the ever-present political and social pressure to do something for the less fortunate.

The Farm Security Administration has gained valuable experience with this problem and has accumulated a considerable body of data with respect to the opportunity for economic and financial rehabilitation of various classes of low-income farmers. However, it must be remembered that practically the entire experience of the FSA has been during a period of rising prices. Its long-time efficacy is not known. It appears, however, that even the FSA primarily served clients in the top of the lower third of farmers, and that there still remained before the war a large group of low-income farmers without any form of adequate credit service. It is likely that credit would not help to rehabilitate a large share of the farmers in the latter class.

We need to give increased attention to what low-income farm people in over-populated areas can do to improve their economic situation. It becomes increasingly obvious that the trend toward mechanization of agriculture will necessitate permanent displacement of large numbers of these people from rural areas. This is a problem that cannot be solved by extension of credit, even though liberally subsidized. Such an approach merely postpones the inevitable adjustment and prolongs the agony of those whom it presumes to help. We need searching analyses of farming opportunities and alternative opportunities in the low-income problem areas of the country in order that lenders will have a better basis for discriminating between the small farmer whose position can be improved with credit and the one whose situation is hopeless. Then all lending agencies, and particularly direct governmental agencies, must approach this problem realistically and courageously. They must recognize, even in the face of political pressure, that

easy credit extended to one whose economic problem as a farmer is insoluble is good neither for the individual nor for society.

### *Private Versus Governmental Credit Agencies*

Although it would be futile to attempt to resolve the whole question of competition between private and governmental agricultural lending agencies, there is need for clarification of the basic issues involved and for clearer delineation of types of services offered. It is not the purpose of this discussion to cover the relationship of public to private lending agencies. That was excellently done in a recent article by Dr. M. R. Benedict.<sup>3</sup> It will suffice here to point out that neither government nor private enterprise is a goal in itself. Neither is inherently good or bad. They are merely two different ways of doing the same things. However, in a society committed as we are to a fundamental belief in the superiority of private enterprise as a way of doing things, it would be desirable to have either definitive legislative restrictions or administrative policies which would insure that the so-called "sound" public agricultural credit agencies would operate without the benefit of continuing Federal subsidy.

Granted that subsidy may be desirable to help initiate cooperative and quasi-cooperative credit institutions, action should be taken as soon as possible to effectuate its retirement. This frequently has not been done. Subsidy retirements in recent years have sometimes come only as the result of extreme pressure from private lenders and other taxpayer groups. Much of the criticism directed toward the public "sound" credit agencies in the past can be avoided in the future if they will formulate and announce a realistic program for retiring the free capital which the United States Treasury has deposited with them. Private lenders can have no quarrel with competition from farmer owned cooperative agencies so long as the latter meet their own costs on a competitive basis.

### *Credit As An Instrument of Social Policy*

We have come a long way from the traditional concept of the function of agricultural credit in our economy of free enterprise. In nearly every case the creditor formerly was interested primarily

<sup>3</sup> Benedict, M. R., *The Relationship of Public to Private Lending Agencies (in Agriculture) and Recent Trends in Their Development*. This JOURNAL, Vol. 27, No. 1, February 1945, pp. 88-103.

in whether the loan was good, the collateral adequate, the repayment possibility satisfactory. The borrower was concerned principally with the terms of the loan, fairness of the creditor, and the facility with which he could repay the loan. Neither creditor nor borrower was concerned much with the broad social effects which might flow out of the loan. In recent years a new emphasis has been placed on the function of agricultural credit. Many people now regard it as an instrument for furthering what they believe to be social progress. Credit becomes the vehicle for altering land use patterns, for solving tenure problems, for redistributing wealth, for influencing agricultural settlement, for controlling land speculation and the like.

It is probably desirable that the use of agricultural credit be tied in with national agricultural policy, whatever that may be. If it is wise to promulgate national agricultural programs, then it is the part of consistency to integrate the various activities of the government affecting agriculture toward the accomplishment of those programs. This is particularly true of agricultural lending by those credit agencies which are substantially subsidized. The chief justification for continuing subsidy of this character must be the attainment of ends which are deemed to be either socially or economically desirable. It should be recognized however, that there are dangers inherent in the utilization of agricultural credit as an instrument of social policy. Sound credit extended on a self-liquidating basis should not be so used. To do so would strike at the foundation of the fee simple title, the unrestricted right to buy and sell land, and the right to bequeath it without hindrance. There should be formulated a clear statement of policy covering the extent to which the various public agricultural lending agencies expect consciously to use credit as a means of effecting social and economic change. This would call for a declaration of conditions which borrowers must meet and practices which they must follow in order to be eligible for the various types of credit available from public agencies.

### *Consolidation of Public Agencies*

During the last Congress a select committee of the House Agricultural Committee, under the chairmanship of Harold Cooley of North Carolina, was constituted to study the FSA and other direct agricultural lending agencies of the government, and to make recommendations for needed legislation. This committee conducted

extensive hearings preliminary to the formulation of proposed legislation contained in a House Bill known as the "Farmers Home Corporation Act of 1944."<sup>4</sup> In mid-1944 the Cooley Committee was authorized to conduct a similar investigation of the agencies administered under the FCA. This investigation had only started when the Cooley Committee was terminated with the election of a new Congress. It is not clear at this writing whether either the entire House Agricultural Committee or a select sub-committee will proceed with the study and investigation of the Farm Credit Administration. That there is need for organic structural overhauling of the credit units within the FCA is generally agreed. Study is being given to this problem by responsible personnel within the FCA, as well as by isolated groups and individuals outside. However, such study is so intermittent and lacking in coordination that no comprehensive legislative proposal may be expected to result from it.

It would be helpful at the present time if a study commission were constituted, representative of various regions and interests throughout the country, to study the whole problem of government and agricultural finance. The primary function of the commission would be to make recommendations for a new legislative framework within which all public and quasi-public lending agencies would operate. Such a study commission would not be unlike that which President Wilson appointed in 1913, whose recommendations resulted in the Federal Farm Loan Act of 1916. Unless such an approach is taken to the simplification and streamlining of the public agricultural credit agencies, it is probable that we shall continue to patch up the old framework with amendment after amendment and new agency on top of new agency. What is needed in the years ahead is new organic legislation which will completely re-cast the structure and, to some degree, the functions of the public agricultural credit agencies.

It is possible for a farmer to go to a single bank in most sections of the Corn Belt, and, talking to a single individual across a single desk, obtain the following types of agricultural credit: four month production loan for financing seed and fertilizer; nine to twelve month production loan for financing cattle feeding; five year mortgage for financing a new barn or tiling system; and a twenty year

<sup>4</sup> This bill was originally introduced by Mr. Cooley as H. R. 4384 on March 13, 1944. After a turbulent course in public committee hearings, it was revised and reintroduced as H. R. 4876 on May 24, 1944. It was never adopted.

mortgage for purchase of a farm. In addition, the local farmers' business plant (cooperative) may borrow for operating capital or for new facilities from the same bank through the same individual. Under these circumstances, it is difficult for the average farmer to understand why he must contact anywhere from two to half a dozen different men in different offices to get comparable credit from a public or cooperative agency. Study should be given to the feasibility of having a single bank of discount and issue for agriculture that would be able to issue securities of various maturities and would be able to meet all the sound credit needs of agriculture. This would call for considerable consolidation of units and elimination of supervisory and regulatory bodies, from the national level clear through to the county level. It would mean one point of contact between farmer-borrowers and the lending institution. It would bring economies of operation. It would result in improved credit service for farmers.

#### *Extension Education for Lenders*

The extension departments of the various state agricultural colleges and state banking associations should develop cooperative extension educational programs in the granting and use of agricultural credit. Farmers should be taught when it is wise and unwise to use credit. They should be familiarized with practices which make the use of credit profitable. Agricultural lenders should be given opportunity to meet in regularly organized extension sessions to discuss the characteristics of agriculture and of agricultural lending with which they should be conversant, in order adequately to meet the credit needs of farmers in their trade areas. It would also be possible through such meetings for lenders to exchange with each other ideas that make for the development of better agricultural credit service. The agricultural colleges should get the concept that some of their most effective work for the improvement of agriculture in their states may be done through such an instrumentality as an extension educational program for lenders who daily contact and influence many farmers.

#### *The Bank Examiner and Farm Loans*

Although the Federal Reserve Act and subsequent legislation attempted to make special provision for longer maturity of agricultural loans through commercial banks, many commercial bankers have in fact experienced difficulty satisfying bank examiners



that their agricultural paper was liquid. In recent years there has been an evident shift, at the national level, in the attitude of such agencies as the FDIC and the Federal Reserve Board with respect to maturity dates of agricultural paper. It is now recognized that liquidity of agricultural paper is more a matter of repayment potentiality of the borrower than of the maturity date of the note. In the past many agricultural loans have been made by banks with the full understanding that the note would be renewed when it came due. In this way banks were able to finance farm operations which required more than six months for their completion. However, this method of finance is not satisfactory to a borrower. It is now recognized in important quarters that the twelve month or two year note of a farmer which has good repayment potentiality is more liquid than the six month note of the same farmer which obviously cannot be repaid at maturity because the operation being financed has not been completed. The problem ahead is to educate bank examiners and bankers to this new concept. When this is done our country banks will be better able to meet the credit needs of farmers on a sound basis.

### *Summary*

The credit needs of agriculture after the war may be met most effectively if reasonable solutions are found for the problems listed herewith: 1, prevention of another land boom with its creation of unmanageable debt burdens; 2, completely separate standards for "sound" and "soft" credit; 3, the development of some mechanism which will permit qualified operators to borrow "sound" credit with less than 50 percent equity; 4, the attainment of desirable adjustments in credit terms; 5, the development of adequate credit facilities for part-time farmers; 6, improved credit for land betterments; 7, more searching study on the problem of low-income farmers; 8, the development of a broader basis for understanding of the relationship between private and public credit agencies; 9, the development of a statement of policy covering the use of credit as a means of effecting social and economic change; 10, the combining and streamlining of the public farm credit agencies; 11, the development of extension educational programs in agricultural lending for both borrowers and lenders; and 12, extension of the concept among bankers and bank examiners that liquidity of agricultural paper is more a function of repayment ability than of the maturity date on the note.

## AGRICULTURAL MARKETING PROGRAMS AFTER THE WAR

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AT THE start I would like to state my personal conviction that the kind of agricultural marketing programs we had before the war will be inadequate in the postwar period. The marketing programs of the colleges and the various government agencies will not only have to be expanded and strengthened; they will need a considerable change of emphasis.

Before the war most of the work in agricultural marketing could be classified as research, education, service, or regulation. These efforts were designed primarily to make the existing marketing system operate as smoothly as possible. They did little to bring about fundamental changes in the marketing system,—nor even in methods of marketing. We will need more research, education, services and regulation after the war, but we will need much more than that. I believe that public agencies will, and should take greater responsibilities for determining the prices of farm products, for improving nutrition, for helping develop better physical facilities for processing and distribution, and for developing and promoting more efficient methods of marketing. I shall not attempt to give detailed reasons for this, but some of the reasons will be apparent in the following parts of the paper.

To carry out such a program we really need more than *Agricultural Colleges* or a *Department of Agriculture*. Perhaps we need a *Department of Food and Agriculture*, using the term "food" in the current broad sense—including tobacco, cotton, and so on. In any event, some appropriate public agencies must take real responsibility for improvements in the whole marketing system—all the way from the farmer to the city consumer. This includes meat distribution as well as livestock marketing. It includes terminal marketing problems and retailing as well as local problems of assembling and selling farm products.

\* This paper was written while the author was on leave from the War Food Administration. It represents the author's own personal views about the kinds of marketing programs that will be needed after the war. Neither the War Food Administration nor Iowa State College has any responsibility for these views.

*Experience During the Depression and the War*

Of course, this thought is not new. Even before the war public agencies were taking greater responsibilities for food marketing and distribution. During the war these responsibilities have greatly increased. Before the war, government agencies had developed and carried out several "action programs" in marketing. These resulted primarily from the industrial and agricultural depression. Low prices to farmers and huge surpluses brought insistent demands for government agencies to step in and do something about marketing. Among the results were price supporting purchases and loans, a government storage program, export subsidies, and marketing agreements. During the war, of course, it has been necessary to go much further in the management of our food supplies. Production goals represent one aspect of food management, but a great deal of the emphasis has necessarily been upon marketing and distribution—for example, price supports, price ceilings, procurement for lend-lease and military forces, food orders, priorities for transportation and storage, and so on.

Many of these controls can, and should, be abolished soon after the war. Yet, I believe public agencies will, and should, take a more active hand in food management after the war than they did before it. To make this clear I shall discuss first some of the most important food management jobs which will have to be tackled after the war. Then I shall touch very briefly upon the programs needed in the older fields of services and regulations.

*Price Supports*

Congress has directed that prices of most important farm products be supported for at least two or three years after the war ends. There is a perfectly sound reason for this. Farmers who stepped up production 30 percent to meet wartime needs should not be penalized by a demoralized market after the war. Almost everyone will agree that the farmer is entitled to some kind, and some degree, of protection after the war. The real question is, what kind of protection and how much.

The answer is not yet clear. The spirit of the Steagall Amendment might be carried out in many alternative ways, some of which would not particularly affect marketing. For example, if it is not possible to support unlimited production at 90 percent of parity,

we might attempt to reduce production, or we might pay a subsidy directly to the farmer. Neither of these alternatives would affect marketing very much. But neither of these alternatives seems entirely satisfactory. The government probably must stand ready to buy agricultural surpluses. But once the government buys surpluses it has a marketing program on its hands. What will the government do with the products it buys? There are many alternatives. The surpluses can be destroyed, or allowed to spoil; they can be stored; they can be dumped in foreign markets; they can be diverted to such uses as animal feed; they can be used in nutrition programs like school lunches; or they can be resold in the regular market at a loss. Once the government buys food surpluses it is in the food management business, and must have a marketing program to dispose of its goods. Its policies will affect not only the farmer, but also the food trades and the consumers.

This is not the proper place to analyze price policy. It may be in the farmer's long-term interest to introduce greater flexibility into the price support pattern. But, even if this is done, any price support operations will necessitate an active marketing program.

### *Nutrition Programs*

In the 1930's, when markets would not absorb the food supplies, we began to realize that millions of consumers could not afford even a minimum diet from a nutritional standpoint. We have had serious surpluses in the market sense, but we have never had a general food surplus above the needs of the people in the United States and in the world. We must make a real attack on the problem of undernourishment. This means more research and education; but it also means developing an economic program which will enable undernourished people to obtain the food they need.

Before the war considerable progress was made on this front through such devices as school lunches, food stamps, milk stations, cotton mattresses, and distribution of food to institutions and to relief families. Most of these programs have been reduced or suspended during the war. The main exception is the School Lunch Program.

We will need not only to develop programs of this kind, but to put greater emphasis upon nutrition. Surplus disposal alone is not enough. School lunches should be extended after the war to more children—perhaps, even to all children, regardless of the income of

the parents. In addition, we will need some kind of program for families with low per capita income. One form of program that is now being discussed is a so-called, "food allotment program." A bill introduced by Senator Aiken last year would set up such a program. The purpose would be to enable low-income families to buy the "adequate diet at minimum cost." If all low-income families actually did get such a diet we would not only use up a lot of surplus food; we would be making real progress in nutrition and health.

Serious consideration is now being given to various forms of food allotment programs—especially to means of assuring that government subsidies are used, mainly at least, to bring about a net increase in food consumption. One way of doing this (not the way in the present Aiken Bill) would be to sell a complete book of coupons of a value equal to the cost of the entire diet. Participating families would be required to pay some percentage of their income—possibly 40 percent. For example, the diet would cost about \$60 a month for a family of four persons. A family of four with a monthly income of \$100 could buy \$60 worth of food coupons for \$40.

### *Marketing Agreements*

The two preceding sections discuss programs which would be carried out primarily by government agencies. But much can be done by farmers, cooperative associations, processors and dealers. In fact, the most fundamental improvements in marketing will doubtless be made by these groups, rather than be imposed by government agencies.

For years the food trades, as well as marketing students, have realized that there is a great deal of expensive overlapping and duplication in the marketing system. City milk distribution is a classic example, but there are many other, less obvious, ones. Why don't we do something about it? The reasons are many and complex, but perhaps the main reason is that we have never had a satisfactory mechanism for bringing about active cooperation between the food trades and the government agencies. The food trades could make great improvements if the government could enforce a program agreed upon by most of the industry. The answer may well be some form of marketing agreement—but an agreement that goes far beyond the scope of the present agreements on milk

and vegetables. We will need some kind of agreement to deal with the inefficiencies and uneconomic practices in the markets.

### *Marketing Facilities*

Great improvements are needed in processing facilities and in terminal market facilities for perishables such as fruits, vegetables and poultry. Our efforts in the past have been centered too much upon the problems close to the farmer, and we have done little to improve the central and terminal markets. Possibly this is another problem which could be solved through something like a marketing agreement. Food dealers want better facilities fully as much as do the farmer and the consumer. Some states (New York, for example) have set up market authorities to deal with this problem, and have made good progress. The big terminal markets deserve attention from both state and federal authorities. One problem here, of course, is money. A new terminal in New York City would be expensive. Yet, if it were properly planned and properly managed it would be entirely and truly self-liquidating, and would be of lasting benefit to agriculture and to the general public. Any public works program should give careful attention to the needs for better market facilities.

### *Services and Regulations*

In spite of the emphasis upon food management programs we should remember the need for strengthening the older, and basic, programs of grades, standards, inspection, market news, and enforcement of various fair trade laws and regulations. These will continue to be important after the war, but most of these programs will need strengthening.

Perhaps we should make a few very brief comments concerning some of these activities. The grading and inspection program needs to be extended at both ends—to the farmer and to the consumer. Great progress has been made in the adoption of uniform grades as the basis for wholesale trading in central and terminal markets. This is a real accomplishment, but farmers and consumers would get even greater benefits if the program were more adapted to their needs. Market news will need a good deal of readjustment and expansion to cope with the trend toward decentralized marketing. We will need much more than quotations in a few big markets. We will need a general picture of the supply and price situation through-

out the country, and we will need to carry it both ways—to the farmer and to the consumer.

Fair trade laws are in an evolutionary state. We need a real policy for dealing with the large corporations now engaged in the food business. We should not penalize efficiency and reward inefficiency. Neither should we allow monopolistic practices that limit the market, that raise prices unnecessarily high to the consumer, nor that force farm prices below the economic level. This is an important matter of food marketing policy, and one which has not received enough attention by agricultural marketing experts.

A similar subject is that of interstate trade barriers. These are monopolistic programs carried out through various laws and regulations that interfere with trade. The evils of trade barriers are generally conceded. We need a program for eliminating these and for preventing new ones.

### *Research and Education*

Real lasting progress can come only through research and education. We cannot wait very long before tackling some of the problems discussed above, but we must be doing the research needed to give the basis of a sound program. I believe there is a need for changing the emphasis of marketing research and education. In the past we have too often been content with gathering and teaching facts and statistics describing how things are marketed. Our efforts in this field have been concentrated too much on the farm end of the marketing system, and have given too little attention to the city distribution end. More of our future efforts should be devoted to analyzing the weaknesses of our marketing system and developing positive, and constructive, programs for improving it. Moreover, we cannot stop with writing bulletins. We must find a way of stimulating the thinking of farmers, dealers, and voters. It is not enough to write bulletins criticizing current programs, or even pointing out possible improvements in the programs. The issues must be understood by the people, and by their representatives in Congress and in the state legislatures. This is a job that must be done by the research men and teachers in the field of marketing.

## THE COST OF SUBSISTENCE

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ELABORATE investigations have been made of the adequacy of diets at various income levels, and a considerable number of "low-cost," "moderate," and "expensive" diets have been recommended to consumers. Yet, so far as I know, no one has determined the minimum cost of obtaining the amounts of calories, protein, minerals, and vitamins which these studies accept as adequate or optimum. This will be done in the present paper, not only for its own interest but because it sheds much light on the meaning of conventional "low-cost" diets.

This paper is organized under five headings, devoted to

1. The quantities of the various nutrients which should be contained in an average person's diet.
2. The quantities of these nutrients which are found in certain common foods.
3. The methodology of finding the minimum cost diet.
4. The minimum cost diet in August 1939 and August 1944.
5. Comparison with conventional low-cost diets.

The curious may wish to turn first to Table 2, which gives the composition and cost of the most economical diets in August 1939 and 1944 for an active economist (weighing 70 kilograms) who lives in a large city.

### *Nutritive Requirements*

The economist uses a production function to describe the relationship between the quantities of the productive services and the quantity of product. The product derived from an increment of productive service A is usually assumed (1) to diminish as the quantity of A increases, and (2) to depend upon the quantities of the other productive services used with A.

This approach can be applied also to the relationship between quantities of nutrients and "health" (used here generically to describe strength, vigor, avoidance of disease, etc.). The findings of nutrition studies clearly indicate:

1. After certain minimum values of the nutrients are secured, additional quantities yield decreasing (and in some cases eventually negative) returns to health.
2. The optimum quantity of any nutrient depends upon the quantities of the other nutrients available.



A few of the many illustrations of these findings may be given.

Diminishing returns is illustrated by the facts that the amount of calcium in the body increases much more slowly than the input of calcium, and that increases of longevity are not proportional to increases of calcium inputs.<sup>1</sup> The incidence of goiter was found to vary in inverse proportion to the amount of iodine in the water in Michigan localities.<sup>2</sup> An example of substitution is the recommendation of 30 micrograms of thiamine per 100 calories not derived from fats,<sup>3</sup> and one of complementarity is the loss of riboflavin which accompanies a deficiency of thiamine.<sup>4</sup>

The science of nutrition is much too young to have attained even an approximate measurement of the "health" function for representative individuals, or to determine the extent of individual variation. The optimum quantity of calories is known fairly accurately, but the requirements of other nutrients are known only roughly or not at all. Many minima (to which 50 percent is usually added as a safety factor) are found by determining the lowest level of input compatible with a stable rate of loss of the nutrient through excreta. It is probable that nutrient requirements have been overstated; for example, a 5 month experiment on young men with riboflavin held at less than two-thirds of the recommended level led to the conclusion that they did not suffer any clinical or physiological defects.<sup>5</sup> The interrelationships among the various nutrients are even more obscure, and they are virtually ignored in dietary recommendations.

The ultimate health function will doubtless be very complex. In addition to calories, the body requires about thirteen minerals (some in very minute quantities), and perhaps half as many vitamins. Protein contains two dozen amino acids, of which almost

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<sup>1</sup> Sherman, H. C., H. L. Campbell, and C. S. Lanford, "Experiments on the Relation of Nutrition to the Composition of the Body and the Length of Life," *Proceedings of the National Academy of Science*, XXV (1939), 16-20.

<sup>2</sup> Curtis, G. M. and M. B. Fertman, "Iodine in Nutrition," *Journal of the American Medical Association*, Vol. 121 (February 6, 1943), p. 423.

<sup>3</sup> Sherman, H. C., *Chemistry of Food and Nutrition* (6th ed., 1941), p. 360.

<sup>4</sup> Sure, B., "Vitamin Interrelationships, III," *Journal of Nutrition*, XXVII (1944), 447-52.

<sup>5</sup> The tests were made on conscientious objectors; see A. Keys, A. F. Henschel, O. Mickelsen, J. M. Brozek, and J. H. Crawford, "Physiological and Biochemical Functions in Normal Young Men on a Diet restricted in Riboflavin," *Journal of Nutrition*, XXVII (1944), 165-78. Similar results were found for thiamine when the daily output was .9 mg.; see A. Keys, A. F. Henschel, O. Mickelsen, and J. M. Brozek, "The Performance of Normal Young Men on Controlled Thiamine Intakes," *Journal of Nutrition*, XXVI (1943), 399-415.

half are necessary to human beings.<sup>6</sup> The precise determination of our needs for these—and no doubt other yet undiscovered—nutrients lies far in the future.

Nevertheless standards of dietary adequacy have been established, perhaps prematurely and certainly very tentatively. The “allowances” (a term used to indicate their preliminary nature) of the National Research Council embody what is presumably the 1943 consensus of the experts; they are given in Table 1. Other minerals and vitamins are believed to be supplied in adequate quantities if these nutrients are secured from natural foods. The requirements are net of losses in the preparation of food. These standards are met by the minimum cost diets derived subsequently.

TABLE 1. DAILY ALLOWANCES OF NUTRIENTS FOR A  
MODERATELY ACTIVE MAN  
(weighing 154 pounds)\*

Nutrient	Allowance
Calories	3,000 calories
Protein	70 grams
Calcium	.8 grams
Iron	12 milligrams
Vitamin A	5,000 International Units
Thiamine (B <sub>1</sub> )	1.8 milligrams
Riboflavin (B <sub>2</sub> or G)	2.7 milligrams
Niacin (Nicotinic Acid)	18 milligrams
Ascorbic Acid (C)	75 milligrams

\* National Research Council, *Recommended Dietary Allowances*, Reprint and Circular Series No. 115, January, 1943.

### *Nutritive Values of Foods*

The minimum cost of an adequate diet is obviously governed by the nutritive values and costs of the foods eligible for inclusion. The very restricted list of foods considered in this study is discussed in Section 3 and the foods are listed in Tables A and B. It may be mentioned here that only natural foods are included; vitamin pills are excluded because they do not contain all of the nutrients (known and unknown) which are necessary to good health.<sup>7</sup>

The nutritive values of common foods are known only roughly,

<sup>6</sup> For summaries of the present knowledge, see *Yearbook of Agriculture*, 1939, Food and Life; H. C. Sherman, *Chemistry of Food and Nutrition* (6th ed., 1941).

<sup>7</sup> Puppies put on a diet in which the vitamins were provided from synthetic sources lived only 100 to 150 days; see J. P. Lambooy and E. S. Nasset, “The Inadequacy of Eight Synthetic B Vitamins for the Nutrition of Puppies,” *Journal of Nutrition*, XXVI (1943), 293-302.

TABLE A. NUTRITIVE VALUES OF COMMON FOODS PER DOLLAR OF EXPENDITURE, AUGUST 15, 1939

Commodity	Unit	Price Aug. 15, 1939 (cents)	Edible Weight per \$1.00 (grams)	Calories (1,000)	Protein (grams)	Calcium (grams)	Iron (mg.)	Vitamin A (1,000 I.U.)	Thiamine (mg.)	Ribo- flavin (mg.)	Niacin (mg.)	Ascorbic Acid (mg.)
**1. Wheat Flour (Enriched)	10 lb.	96.0	12,600	44.7	1,411	2.0	365		55.4	83.8	441	
2. Macaroni	1 lb.	34.1	3,217	11.6	377	14.4	175		3.2	8.8	68	
3. Wheat Cereal (Enriched)	28 oz.	27.1	3,150	11.3	377	14.4	175		14.4	8.8	114	
4. Corn Flakes	1 lb.	7.1	8,781	25.2	897	1.7	99	30.9	13.5	2.5	68	
5. Fruit Flakes	1 lb.	4.6	9,891	36.0	897	1.7	99		17.4	7.9	106	
6. Honey Grits	24 oz.	8.5	8,005	28.6	680	.8	80		10.6	1.8	110	
7. Rice	1 lb.	7.5	6,048	21.2	460	.6	41		2.0	4.8	60	
8. Rolled Oats	1 lb.	7.1	6,389	25.3	907	5.1	341		37.1	8.9	194	
9. White Bread (Enriched)	1 lb.	7.9	6,742	15.0	488	2.5	115		13.6	6.2	160	
10. Whole Wheat Bread	1 lb.	9.1	4,985	12.2	484	2.7	125		18.0	6.2	160	
11. Rye Bread	1 lb.	9.2	4,980	12.4	484	2.7	125		18.0	6.2	160	
12. Pound Cake	1 lb.	14.1	3,059	12.4	320	1.1	34		9.9	8.0	68	
13. Soda Crackers	1 lb.	11.0	3,897	12.6	310	1.1	34	18.9	2.8	3.0	17	
14. Syrup	1 lb.	11.0	3,897	12.6	310	1.1	34		2.8	3.0	17	
**15. Evaporated Milk (can)	14 oz.	6.7	8,087	6.1	238	10.5	18	16.8	4.0	16.0	7	177
16. Butter	1 lb.	10.8	8.4	482	15.1	15.1	3	26.0	3.0	23.5	11	60
**17. Oleomargarine	1 lb.	16.1	2,817	20.6	17	.6	6	44.2	.2	.5	2	
18. Eggs	1 doz.	32.6	1,837	2.9	238	1.0	52	55.8	2.8	6.5	1	
**19. Cheese (Cheddar)	1 lb.	24.2	1,874	7.4	443	10.4	19	33.6	2.8	10.3	4	
20. Cream	1 lb.	14.1	2,183	15.7	681	1.0	48	16.9	.6	9.5		17
21. Peanut Butter	1 lb.	16.7	1,108	15.7	681	1.0	48		9.6	8.1	471	
22. Mayonnaise	1 lb.	20.3	2,234	8.6	18	.2	8	2.7	.4	.5		
23. Corn	1 lb.	20.3	2,234	20.1	18							
24. Lard	1 lb.	9.8	4,083	41.7	166	.1	34	.2	2.1	.5	5	
25. Sirloin Steak	1 lb.	39.6	1,145*	2.9	214	.1	32		2.1	2.9	69	
26. Round Steak	1 lb.	36.4	1,246*	2.2	214	.1	32	.4	2.5	2.4	87	
27. Rib Roast	1 lb.	29.2	1,553*	3.4	215	.1	33		2.6	2.6		
28. Chuck Roast	1 lb.	22.6	2,077*	8.6	404	.2	62	.4	1.0	4.0	190	
**29. Plate (Beef)	1 lb.	26.8	1,693*	9.2	333	.2	159		1.9			
30. Liver (Beef)	1 lb.	27.6	1,693*	3.1	245	.1	15	169.2	6.4	50.3	316	525
31. Leg of Lamb	1 lb.	56.6	1,293*	3.3	140	.1	15		2.8	3.9	86	
32. Leg of Chops (Rib)	1 lb.	50.7	1,477*	3.5	196	.2	30		1.7	2.7	54	
33. Pork Chops	1 lb.	24.2	1,874*	4.4	249	.3	57		17.4	2.7	60	
34. Pork Loin Roast	1 lb.	25.6	1,772*	10.4	152	.2	23		18.2	3.6	79	
35. Bacon	1 lb.	27.4	1,655*	6.7	212	.2	23		1.6	3.3	71	
36. Ham-smoked	1 lb.	31.9	1,450*	13.8	184	.1	21		1.4	1.8	50	
37. Salt Pork	1 lb.	30.9	1,450*	13.8	184	.1	21		1.4	1.8	50	
38. Roasting Chicken	1 lb.	42.8	1,072*	1.7	156	.1	24	.1	1.0	1.8	68	46
39. Veal Cutlets	1 lb.	42.8	1,072*	1.7	156	.1	24		1.4	1.8	68	
40. Turkey	1 lb.	13.0	3,489	5.8	705	6.8	45	3.5	3.6	2.4	209	544
**41. Sausage, Pink (can)	16 oz.	13.0	9,072	5.8	97	.5	36	17.4	3.6	2.7	5	
42. Sausage	1 lb.	4.4	4,982	4.9	60	.4	30		2.7	2.7	28	
43. Lemons	1 doz.	26.0	2,380	1.0	21	.5	14		1.4	1.4	28	
44. Oranges	1 doz.	30.9	4,439	2.2	40	1.1	18	11.1	3.6	1.3	1	502
**45. Green Beans	1 lb.	7.1	5,750	3.4	139	3.7	80	9.0	9.0	4.5	26	1,863
**46. Cabbage	1 lb.	3.7	6,089	2.7	73	2.8	43	185.5	6.1	4.5	59	5,369
47. Carrots	1 bu.	7.9	3,918	2.9	51	2.8	43		1.4	1.4	59	609
48. Celery	1 head	8.2	2,247	5.4	27	1.1	23	112.4	1.4	1.4	11	313
**49. Onions	1 lb.	8.6	11,844	5.8	166	3.3	59	16.6	4.7	3.4	21	449
**50. Onions	1 lb.	8.6	11,844	5.8	166	3.3	59		4.7	3.4	21	1,154

TABLE B. NUTRITIVE VALUES OF COMMON FOODS PER DOLLAR OF EXPENDITURE, AUGUST 15, 1944

TABLE B. NUTRITIVE VALUES OF COMMON FOODS PER DOLLAR OF EXPENDITURE, AUGUST 15, 1944										
Commodity	Price Aug. 15, 1944 (cents)	Calories (1,000)	Protein (grams)	Calcium (grams)	Iron (mg.)	Vitamin A (1,000 I.U.)	Thiamine (mg.)	Riboflavin (mg.)	Niacin (mg.)	Ascorbic Acid (mg.)
1. Wheat Flour	64.6	24.9	786	1.1	203		30.9	18.6	246	
2. Corn Meal	23.2	12.3	893	15.0	183	32.6	12.0	9.2	119	
3. Corn Meal	6.3	20.3	656	1.2	72		12.7	2.8	77	
4. Rolled Oats	10.9	18.1	681	3.7	245	17.4	26.6	15.7	46	
5. Rolled Oats	10.9	18.1	681	3.7	245	17.4	26.6	15.7	46	
6. Cabbage	4.9	2.0	84	3.6	27	5.4	6.9	8.4	20	40
7. Potatoes	80.1	61.1	143	8	96	2.8	19.5	8.0	84	4,054
8. Spinach	11.6	8	74	1.1	22	641.3	4.0	9.6	23	1,071
9. Sweet Potatoes	12.3	4.0	67	1.1	22	120.5	3.5	2.2	34	1,924
10. Navy Beans	10.8	14.7	924	6.2	433	21.0	21.0	13.4	119	793
11. Sugar	67.0	26.9	479	—	—	—	—	—	—	—
12. Pancake Flour <sup>1</sup>	12.2	16.0	85	18.1	46	132.3	3.7	1.9	41	805
13. Beans <sup>2</sup>	7.8	2.2	85	1.2	70	2.9	2.9	6.3	39	580
14. Liver (Pork) <sup>3</sup>	21.9	2.7	408	1.2	518	145.0	10.4	51.8	472	

\* Quantities including inedible portions.

\* Quantities including inedible portions.

1 Unit: 20 oz.; edible weight: 4,647 g.      2 Unit: 1 lb.; edible weight: 2,971 g.

and indeed they *can* be known only roughly. A large margin of uncertainty arises on several scores:

1. Many nutritive values have not been established quantitatively, or have been determined by obsolete and inaccurate techniques, or the determinations have large standard errors. Beef flank is known to contain the B complex, but the quantities are unknown. Vitamin A is measured by the rate of growth of rats, with standard errors averaging 10 or 15 percent of the mean values.
2. Most foods are not even approximately homogeneous, and wide ranges of nutritive values are found. For example, the milligrams of ascorbic acid in 100 grams of apples varies as follows with variety:<sup>8</sup>

Jonathan	4.4
McIntosh	2.0
Northern Spy	11.0
Ontario	20.8
Winesap	5.8
Winter Banana	6.6

Again, the ascorbic acid in milk varies with the season.

3. The maturity of the product, the length and conditions of storage, temperature, and similar factors are important. The ascorbic acid decreases with the maturing of corn, but the vitamin A content increases. Vitamin A, thiamine, and ascorbic acid are often lost during storage.
4. Even when the nutritive values of the food are known, they are much affected by the way the food is prepared. Well-done rib roasts of beef have 69 percent of the thiamine, 77 percent of the riboflavin, and 79 percent of the niacin present in the raw cuts. Cabbage has a high ascorbic acid content, but if it is boiled for several hours and the liquid discarded, virtually none of the vitamin survives. On the other hand the vitamin A in turnip greens is increased by cooking.
5. The proportion of food wasted is an additional unknown in the evaluation of ordinary diets.<sup>9</sup>
6. The nutrients in foods cannot be wholly extracted. Spinach contains much calcium but it is not nutritionally available because of the presence of oxalic acid.

Enough difficulties have been indicated to suggest the almost infinite complexity of a refined and accurate assessment of nutritive value of a diet.

<sup>8</sup> On this and subsequent points, see L. E. Booher, E. R. Hartzler, and E. M. Hewston, *A Compilation of the Vitamin Values of Foods in Relation to Processing and Other Variants*, Department of Agriculture, Circular 638 (May 1942); and G. Adams and S. L. Smith, *The Vitamin Content and the Preservation of Foods*, Department of Agriculture, Miscell. Public. No. 536 (1944).

<sup>9</sup> Another difficulty that may be mentioned in this connection is the variation in the quantity of food received for a given price, as when oranges are purchased by the dozen and celery by the stalk.

In the subsequent work, I use C. Chatfield and G. Adams' *Proximate Composition of American Food Materials* for estimates of inedible refuse, calories, and protein.<sup>10</sup> The data on minerals and vitamins are from the unusually complete summary by A. D. Bowes and C. F. Church, *Food Values of Portions Commonly Used*.<sup>11</sup> In light of the foregoing remarks it should not be necessary to belabor the tentativeness of the figures.

The average nutritive values used are those of the foods as purchased. The losses due to waste and faulty preparation are ignored, as in most diet appraisals,<sup>12</sup> in part for the common reason that virtually nothing is known about the extent of these losses. But there is also the reason that these losses are largely avoidable, and a person who wished to minimize the cost of his food could reduce them to inappreciable amounts.

### Methodology

The first step is to select a list of potential commodities; obviously the wider this list the lower the cost of the "adequate" diet will probably be. The list here chosen consists of the commodities for which retail prices are reported by the Bureau of Labor Statistics.<sup>13</sup> The list is reproduced in Table A, along with the nutritive values of one dollar's expenditures on each commodity.

The BLS list is a short one, and it excludes almost all fresh fruits, nuts, many cheap vegetables rich in nutrients, and fresh fish. It is beyond question that with a fuller list the minimum cost of meeting the National Research Council's allowances could be reduced, possibly by a substantial amount.<sup>14</sup>

Since the prices are averages of many (large) cities, the minimum cost diet will in principle be affected by seasonal price patterns and should be computed separately for each month. This effect will not prove to be great because seasonal foods play little

<sup>10</sup> Department of Agriculture, Circular 549, June 1940.

<sup>11</sup> Privately printed, Philadelphia (5th ed., 1944).

<sup>12</sup> *Diets of Families of Employed Wage Earners and Clerical Workers in Cities*, Department of Agriculture, Circular 507, January 1939; *Family Food Consumption and Dietary Levels*, Department of Agriculture, Miscellaneous Publication 405, 1941.

<sup>13</sup> The commodities are described in *Retail Prices of Food, 1923-36*, Bureau of Labor Statistics, Bulletin 635, October 1937. The price quotations are averages of 51 large cities in 1939 and 56 cities in 1944; they were taken from the *Monthly Labor Review*, October 1939 and December 1944.

<sup>14</sup> A physiological chemist to whom I showed the diets recommended in turn a mixture he fed to rats, which would (in 1945) cost a man about \$27 a year.

part in the minimum cost diet.<sup>15</sup> It may be noted also that since the prices are averages, they overstate the cost for a representative city because a food with lower-than-average price can be exploited and a food with higher-than-average price curtailed.

As a first step in finding the minimum cost diet, one may exclude any commodity all of whose nutritive values (per dollar of expenditure) are less than those of some other commodity. This procedure is carried a trifle farther in practice, by excluding also a commodity which is definitely inferior to another in its important nutrients and only slightly superior in others. For example, white bread (commodity no. 9) has less than half the nutrients (per dollar) of white flour (commodity no. 1) except for calcium, for which neither commodity is an economical source. This preliminary weeding reduces the list of eligible foods from 77 to 15, and excludes all meats except liver, all sugars, beverages, and patented cereals. The survivors are starred in Table A.

Thereafter the procedure is experimental because there does not appear to be any direct method of finding the minimum of a linear function subject to linear conditions. By making linear combinations of various commodities it is possible to construct a composite commodity which is superior in all respects to some survivor, and by this process the list of eligible commodities can be reduced at least to 9 (which are double starred in Table A). The nutritive values of each of these commodities is then expressed in terms of days' supply of requirements. Various combinations of commodities were used to fulfill certain nutrient requirements,<sup>16</sup> and the one finally chosen is presented in Section 4. There is no reason to believe that the cheapest combination was found, for only a handful of the 510 possible combinations of commodities were examined.<sup>17</sup> On the other hand the annual cost could not have been reduced by more than a few dollars by a better selection from these commodities.<sup>18</sup>

<sup>15</sup> Although it is possible that if the diets had been constructed with prices for some other month, other foods would have been chosen.

<sup>16</sup> An excess of calories is objectionable, but there is no reason to expect ill effects of moderately excessive intakes of the other nutrients. In the test of various combinations of foods, those nutrients (in addition to calories) which would, if fulfilled, necessarily imply fulfillment of other nutrient conditions were used in the algebraic solution.

<sup>17</sup> As a matter of fact, each of these combinations will have a different cost with each set of linear (nutrient) conditions, and there are many such nutrient conditions because excesses are in general unobjectionable.

<sup>18</sup> The nutrient with the highest cost (when secured from its most economical

The derivation of the minimum cost budget for 1944 follows the same procedure.<sup>19</sup> The surviving commodities surviving the first test are reproduced in Table B.<sup>20</sup> Because of computational limitations, fewer trial combinations were investigated but again no large reduction in cost is possible by further search.

It should be added that the content of a diet can be altered substantially without affecting its cost appreciably. In the process of finding the 1939 minimum cost budget several alternative budgets of only slightly higher costs were found among the most preferable commodities.<sup>21</sup> It also appears reasonable to suppose that the number of commodities could be increased materially without increasing much the cost of the diet, although the laborious calculations necessary to illustrate this were not undertaken.

### *The Minimum Cost Diets*

The minimum cost diets for August 1939 and August 1944 are given in Table 2, and their nutritive values are compared with the National Research Council's allowances in Table 3. Consideration

TABLE 2. MINIMUM COST ANNUAL DIETS, AUGUST 1939 AND 1944

Commodity	August 1939		August 1944	
	Quantity	Cost	Quantity	Cost
Wheat Flour	370 lb.	\$13.33	535 lb.	\$34.53
Evaporated Milk	57 cans	3.84	—	—
Cabbage	111 lb.	4.11	107 lb.	5.23
Spinach	23 lb.	1.85	13 lb.	1.56
Dried Navy Beans	285 lb.	16.80	—	—
Pancake Flour	—	—	134 lb.	13.08
Pork Liver	—	—	25 lb.	5.48
Total Cost		\$39.93		\$59.88

source) is calories; it would require \$24.50 to supply for a year the calories from flour (commodity no. 1). But then only 61 days' calcium would be provided, and the most efficient source (cheese, no. 19) could meet the deficiency only at a cost of \$14.90, and the contribution to calories would be relatively small. The requirements for vitamin A and ascorbic acid would still be unfilled. Use of other commodities for calories yields a similar conclusion.

<sup>19</sup> The corresponding table of nutritive values can of course be secured simply by multiplying the entries in Table A by the ratio of 1939 to 1944 prices.

<sup>20</sup> It will be observed that three new commodities are added to the list. The BLS abandoned price quotations on 19 commodities in Table A (including one starred commodity, dried lima beans), and 12 new commodities were examined in making Table B.

<sup>21</sup> The minimum cost diet for 1939, which differs greatly from that for 1944, would have cost only 13 percent more than the latter in 1944.



of the lists in Table 2 will suggest reasons in addition to those given in the preceding sections for not recommending the diets.

The cost of the minimum cost diet rose exactly 50 percent from 1939 to 1944; the cost of food in the BLS index of retail prices of food rose 47 percent in the same period. The fact that the minimum cost diet, with its variable composition, increased slightly more than the (relatively) fixed-composition index of the BLS, is indicative of the fact (which the detailed data confirm) that the more efficient food sources rose relatively more in price.

TABLE 3. ADEQUACY OF MINIMUM COST DIETS, AUGUST 1939 AND 1944

Nutrient	Percent of Year's Allowance*	
	August 1939	August 1944
Calories	100	100
Protein	194	141
Calcium	100	100
Iron	425	245
Vitamin A	100	100
Thiamine	220	185
Riboflavin	100	100
Niacin	148	179
Ascorbic Acid	100	100

\* The allowances are given in Table 1.

In this connection it is interesting to notice that the quantity of wheat flour is increased substantially between the two dates, although its price rose more than other eligible cereals. This is an artificial example of the Giffen paradox, that

a rise in the price of bread makes so large a drain on the resources of the poorer labouring families and raises so much the marginal utility of money to them, that they are forced to curtail their consumption of meat and the more expensive farinaceous foods; . . .<sup>22</sup>

The purpose of the determination of the minimum cost diet will be explained in the next section, but in the light of comments of friends a few remarks (which are really a digression) may be added here. It is usually objected that relative prices would change if the commodities in Table 2 became the sole objects of demand. No one recommends these diets for anyone, let alone everyone; it would be the height of absurdity to practice extreme economy at the dinner table in order to have an excess of housing or recreation or

<sup>22</sup> Marshall, A., *Principles of Economics* (8th ed.), p. 132.

leisure. Waiving this point, all dietary studies accept the prices paid by consumers since these are the conditions of purchase which face the individual buyer. Moreover, any sensible system of prices will lead to similar results. If a society were so misguided as to adopt a minimum diet, it cannot be doubted that the prices of the commodities would fall once agriculture, transportation, food processing, and distributive industries were readjusted to this reduced task.

### *Comparison with Other Diets*

It would no doubt be possible to cull from the literature a very large number of absurd estimates of the minimum cost of subsistence. Instead, I shall list a few restrained estimates by competent dieticians:

1. In 1936 Carpenter and Stiebeling described a minimum cost diet which "gives the cheapest combination of foods that it is desirable to use for an indefinite period," which cost (in 1935) about \$125 a person.<sup>23</sup> (It would have cost about \$100 in 1939.) A restricted diet for emergency use was also given; it cost \$83 in 1935.
2. In 1939 Stiebeling and Clark estimated the cost of an "economical fair diet," as they unenthusiastically described it, at \$78 to \$104 per person in villages and cities. If the recommended classes of commodities are chosen from the BLS list, the 1939 cost would be about \$94 and the 1944 cost about \$138. This was explicitly stated not to be a minimum diet, but it was implied that much less was not tolerable.<sup>24</sup>
3. M. S. Rose presented an unqualifiedly minimum diet which would have cost about \$115 in 1939.<sup>25</sup>

These low-cost diets of the professional dieticians thus cost about two or three times as much as a minimum cost diet.

Why do these conventional diets cost so much? The answer is evident from their composition. The dieticians take account of the palatability of foods, variety of diet, prestige of various foods, and other cultural facets of consumption. Primarily on such grounds

<sup>23</sup> *Diets to Fit the Family Income*, Department of Agriculture, Farmer's Bulletin No. 1757 (1936), p. 10.

<sup>24</sup> *Yearbook of Agriculture*, 1939, p. 333: The diet is for families "in straightened circumstances"; it covers "average minimum requirements but does not afford as wide a margin of safety as desirable. . . ."

<sup>25</sup> *Foundations of Nutrition* (1935), p. 472.

can one explain their emphasis on meats and the inclusion of sugar.<sup>26</sup>

There are two fundamental objections to so merging the physiological and the cultural components of diet. The first is that the particular judgments of the dieticians as to minimum palatability, variety, and prestige are at present highly personal and non-scientific, and should not be presented in the guise of being parts of a scientifically-determined budget. The second reason is that these cultural judgments, while they appear modest enough to government employees and even to college professors, can never be valid in such a general form. No one can now say with any certainty what the cultural requirements of a particular person may be, and on its face it will always be impossible to determine a unique cultural minimum diet for 140 million Americans of transcendental variety of background, social position, and cultural values. If the dieticians persist in presenting minimum diets, they should at least report separately the physical and cultural components of these diets.

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<sup>26</sup> Tax-supported bureaucrats and professors may also have another reason for certain of their practices.

## ADVANCES IN THE TECHNIQUES OF MEASURING AND ESTIMATING CONSUMER EXPENDITURES

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IN RECENT years the study of consumer expenditures has been directed along certain lines determined by developments in the middle thirties. In the years 1934 and 1935 three books appeared that stimulated a wide interest in the possibilities of interpretation and analysis of expenditure data and two comprehensive nationwide surveys were initiated that brought modern survey techniques into this field of inquiry. The publication of "America's Capacity to Consume"<sup>1</sup> in 1934 focussed attention on the use of data from studies of family expenditures in problems of estimation and prediction of aggregate consumer demand. The book highlighted the need for data on consumer expenditures in relation to income on a nationwide scale that had been expressed in general terms in a publication of the Social Science Research Council in 1929.<sup>2</sup> The appearance of "Family Expenditures, A Study of its Variation,"<sup>3</sup> about the same time aroused interest in analyses of expenditure data in terms of stable relationships that can be expressed in a mathematical form. This work illustrated the possibilities of expanding our understanding of family consumption by more intensive analysis of existing information, although the data then available were small, scattered samples heterogeneous with respect to techniques and methods. The ingenious combination of data from various surveys into an estimate for the nation in "America's Capacity to Consume" and the use of many scattered studies as "experiments" to test the continuity or universality of relationships in "Family Expenditures" both indicated the need for a compilation and classification of the numerous studies of family expenditures that had been made in the last hundred years. Just such a comprehensive compilation and review of family living studies was published in 1935 by the U. S. Department of Agriculture as Miscellaneous Publication No. 223, "Studies of Family Living in the U. S. and Other Countries" by Faith M. Williams and

<sup>1</sup> Leven, Maurice, Harold G. Moulton and Clark Warburton, *America's Capacity to Consume*, The Brookings Institution, Washington, D. C., 1934.

<sup>2</sup> Social Science Research Council, *Consumption According to Incomes*. (Mimeographed) 1929. Second imprint, Washington, D. C., 1934.

<sup>3</sup> Allen, R. G. D. and A. L. Bowley, *Family Expenditure, A Study of its Variation*, P. S. King and Son, Ltd., London, 1935.

Carl C. Zimmerman. This work gave the student the complete inventory of materials at his disposal for pursuing any special types of analyses.

While the influence of these publications was spreading, several Federal agencies were engaged in the collection of two comprehensive bodies of data on consumer expenditures from families throughout the entire nation. The first of these, the Study of Money Disbursements of Wage-Earners and Lower-Salaried Clerical Workers, was limited, like the majority of earlier surveys, to a specific occupational group. This study put into practice many improvements in schedule design and content and introduced the use of systematic sampling methods. The second of the large-scale surveys, the Consumer Purchases Study, while not limited in coverage to certain occupational groups, was restricted to native-born families of specific family composition. This survey, built on the first, brought into operation a schedule carefully designed to provide the basis for analyses planned in advance and employed statistical sampling methods in the systematic selection of families interviewed that offered assurance of the representative character of the data collected.

The collection and analysis of data on consumer expenditures has been channeled in directions fixed by the work in those years. Emphasis was placed on the analysis of expenditure data in relation to income for the purposes of summarization, estimation and prediction. These uses of the data required nationwide coverage and representative samples. The association of income with expenditures introduced the important adjunct, the interrelationship of family savings with family income and family expenditures.

The results of the two large surveys, the studies of the Money Disbursements of Wage Earners and Lower-Salaried Clerical Workers and of Consumer Purchases, gave rise to a greatly expanded demand for such information to use in more and more detailed types of analyses. As the data are used, deficiencies in the methods of measurement emerge and indicate the need for investigating and testing techniques that promise more satisfactory results. At the same time the more extensive uses made of the data place increasingly rigid requirements on the quality of the basic data. Each successive survey design has been subjected to more exacting standards of accuracy. So long as the analyst was content with figures on the total clothing expenditure of families, both the

schedule and the sampling plan could be less carefully designed than is required by a demand for information on expenditures for felt hats, fur-trimmed coats and jewelry.

### *Problems of Measuring Income*

The violence of the fluctuations in consumer incomes since 1929 and the increasing realization that the maintenance of consumer expenditures is fundamental to the maintenance of consumer incomes has resulted in increasing interest in recent years in the relation of consumer expenditures to income. Comparisons of estimates of aggregate consumer incomes, expenditures and savings, based on consumer surveys, with similar estimates based on material from other sources have revealed inconsistencies which have led to extensive analyses as to the reasons for the differences, with especial emphasis on the income side of the balance sheet in field surveys.

*Definition of income.* If income is to be obtained on schedules and questionnaires relating to family consumption and used in the classification of the expenditure data it must be precisely defined. The method of defining and measuring income for classification seriously affects the final analyses of the data. As yet, it can be said, there is no general agreement on the measure of income, with an attendant method of accounting, that can be expected to yield the completely satisfactory results for statistical analysis of expenditure data. The income measure for classification has to serve two purposes. It should give the most unambiguous relationships between income and expenditures for all types of goods and services. It should provide the most satisfactory measure of equivalence in economic level among groups in order to provide a basis for valid comparisons of variations in expenditure patterns. If the income measure used classifies in the low income brackets, families that are, in fact, relatively well-to-do, the expenditure data for the low-income brackets are subjected to serious distortions. If the income measure places in comparison families in two areas whose freedom of choice with respect to consumption differs very greatly, the purpose of the analysis may be defeated. Perhaps a single measure of income will never suffice for all the different types of analysis of expenditure data. Experience indicates, however, that improvements in the definition will offer more satisfactory material to the analyst and there will always be a need for a general type of classifi-

cation for the purpose of studying interrelationships among expenditures for goods and services of different types. The awareness of the deficiencies in the definition of income for the purpose of studying expenditures develops out of the analysis of the data. It is difficult to foresee all of the implications of a given definition, principally because the biases and distortions of the results depend in large part on the relative magnitudes of the various components in the income calculation.

The two comprehensive surveys of family consumption conducted in 1934-36, started with a concept of income that can be characterized variously as "spendable income," "income available for living" and "consumer income." This concept was made most precise in the case of farm income probably because the Department of Agriculture and many of the State Agricultural Stations had for many years been making special field studies of farm income and had developed schedule forms as a result of their experience in these studies which set the precedent for a relatively detailed form for use in calculating farm income. The problems of methodology relating to farm income were given careful treatment in the report of the Social Science Research Council on "Research in Agricultural Income"<sup>4</sup> which appeared in 1933. The concept of spendable income as applied to farm family income used in relation to the family expenditures is expressed there as follows:

"Spendable income—the gross money income of the farm business, less the current operating expenses of the farm, less expenditures for taxes and insurance on farm property and interest on mortgage debt, and less any expenditures for replacement of worn-out equipment or livestock, insofar as the new are not additions to the farm business plant. This income concept really attempts to calculate income that can be spent on farm family living, on enlarging the farm business or improving its types of equipment and livestock, on paying off the mortgage, or in various similar ways. As here defined it assumes that taxes, insurance and mortgage interest must be paid, and that tools, machinery, horses, etc., must be replaced exactly at the time they wear out. Under ordinary conditions, these are reasonable assumptions. The remainder after such outlays is probably the minimum which is *available for living* at any particular time. For example, on many farms in a period such as the present (1931-33) a part of the sum usually allotted to equipment replacements, mortgage interest and even taxes has been expended for family maintenance.

"This income concept, sometimes called also the *income available for living*, is probably suited to more uses than any of the foregoing in farm

<sup>4</sup> Social Science Research Council, *Research in Agricultural Income*, Scope and Method, John D. Black, Editor, New York City, 1933.

family studies; it is also especially suited to uses of income as a measure of buying power."

This concept of income had two clear advantages. It was the same accounting method as was used in the recording of family expenditures. The components in the measurement were paralleled in the estimates of aggregate net income of farm operators developed by the Bureau of Agricultural Economics.

*Farm Income.* The measure of family income from the farm so defined was interpreted on the schedule by a record of money receipts from farming by type of product, a record of "current operating expenses" payable during the report period, and a summary estimate of the value of the change in livestock owned or crops stored. Net money income from farming was determined by the difference between total money receipts and the total operating expenses, adjusted for the value of the change in inventory of livestock owned and crops stored. The farm expenses itemized on the schedule were as follows: hired labor for farm; livestock purchased; feed, hay, straw; fertilizer, spraying material; seeds, plants and trees; machinery, tools (repairs, replacements); gasoline, oil, tires, etc. for farm production; repairs on farm buildings and fences; taxes and insurance on farm property; interest and refinancing charges on farm mortgage; the farm share of expense for automobile and other farm expenses.

The items "livestock purchased" and "seeds, plants, trees" could both include outlays that increased the investment in the farm business. The entry of the value of change in the inventory of livestock owned and crops stored was offsetting in the case of the first of these items but the income calculation did not balance out the deduction of an investment item in plants or trees. Rent, interest and taxes on the entire farm including the dwelling were deducted as operating expenses but in the case of repairs and insurance the amounts allocated to family expense were excluded and recorded as family expenditures. The inclusion of all rent, interest and taxes was offset in the final calculation of total income, money and non-money, by an entry of the rental value of the farm home.

Because the constituents of total income from the farm had been obtained in as much detail, the deficiencies of the method of measuring income for the purposes of correlation with expenditures were easier to identify than in the case of nonfarm income. The element in the calculation that appears most seriously to have



affected the interpretation of the expenditure data was the classification of money spent for the replacement of farm machinery and equipment as an expense item. When the total outlay for machinery is deducted from the income of the current year a farm family making a considerable replacement in the year of the study is placed, for the purposes of classification, in a low-income bracket. The allocation of the purchases of a \$1500 tractor, for example, to the current operating expenses of a farm unit with gross receipts amounting to \$2500 could result in a calculated net income of less than \$500. As a result, the group of families classified in the low-income brackets included an appreciable number with family expenditures characteristic of a much higher economic level. Average consumption for the lowest income brackets thus measured was above levels that could be rationalized either in terms of the consumption habits of other income groups or by comparison with the results of various small studies of low-income farm groups made about the same time.

The realization of the effect of the method of accounting in the case of machinery and equipment on the interpretation of the end results led to a change of procedure in the small sample survey conducted in 1942. Over all farm families the average expenditure for machinery and equipment purchased as replacements is an approximation for annual depreciation. Accordingly, in place of the purchases, which distorted the classification of families by income bracket, a depreciation allowance was used in the calculation of the current operating expenses.

The same type of difficulty is introduced by the inclusion of investment in plants and trees with purchases that are of the nature of upkeep as part of current operating expenses but since, over the entire farm population, such outlays are neither as large nor as frequent as purchases of machinery for replacement, the effect on the expenditure analysis was not as serious as the one just discussed above. Whether or not specific outlays can be logically placed in the category of operating expenses vis-à-vis investment, the mode of accounting may be questioned for the purposes under consideration. It is quite possible that a strict cash accounting might lead to an income total more closely correlated with the family expenditures than a total based on the assumption that farm expenses are paid before the family acquires any consumer goods or services.

*Entrepreneurial income.* Before 1935 the only studies of the incomes of individual nonfarm entrepreneurs had been made for in-

come tax purposes, in the light of the various definitions of income embodied in income tax legislation. There was no such body of experience in obtaining data on nonfarm entrepreneurial income in field surveys as existed in the case of farm income. The persons responsible for designing the income schedules used in the consumer income-expenditure studies of the mid 1930's were dissuaded from preparing schedules for obtaining the details needed to calculate the net income of nonfarm entrepreneurs by two considerations: (1) It was believed that small entrepreneurs do not keep the records required to calculate a true net income figure and that their transactions are so numerous and so varied that it would be more difficult for them than it is for most farm families to recall the amounts of their various transactions in such a way as to provide the data required for estimating net income; (2) It was believed nonfarm entrepreneurs who do keep the records necessary to compute net consumer income would strenuously object to recalculating them in a form different from the one used for income tax purposes. It was impossible to use the figure computed for income tax returns because the method of treating capital gains in the income tax law is not adapted to an income-expenditure analysis and because the period covered in the schedules obtained from individual families was very seldom that covered by their income tax returns.

In a study of family incomes made in the State of Minnesota, by the Minnesota Resources Commission<sup>5</sup> a separate section of the schedule was devoted to the details of income for the self-employed. This account was similar in form to the report required on the individual income tax return, Form 1040, Schedule D. The interviewers were instructed to inquire about the details of receipts, inventory change and business expenses in order to obtain the estimate of net income desired. Relatively few independent business or professional persons, however, could be persuaded to give the interviewers such detailed accounts. The experience in this survey and others covering this group indicates that such detail and the desired accuracy on the income report can probably only be obtained in specially designed studies having this information as their primary purpose. Such special surveys could give a basis for conversion factors between estimated totals and the net income derived from reports on details.

*Wage and salary income.* Wage and salary income was considered

<sup>5</sup> Minnesota Incomes, 1938-39, A Report on the Distribution of Family and Individual Incomes, Minnesota Resources Commission, St. Paul, Minnesota, 1942.

part of total spendable income after the deduction of a few items of occupational expense, namely, tools, equipment, books and periodicals, dues to professional associations and labor unions.

The items to be included as occupational expense and charged against income from wages and salaries are still the subject of debate. Some surveys have considered all outlays of this type as family expenditures. There are arguments, on the other hand, for including in the list of occupational expenses such items as special types of clothing required by the occupation. The list used in recent surveys comprises the items on which there exists general agreement and which do not require difficult distinctions on the part of the interviewer and the respondent. Occupational expenses, however liberally defined, would seldom amount to a sum that would alter the classification of the family by income bracket and accordingly affect the interpretation of the expenditure data.

*Other types of money income.* Income of other source types included in the total covered net rents, interest and dividends received, pensions, annuities and benefits, gifts and inheritances used for current family expenses and capital gains or losses from property bought and sold during the year.

The chief problems connected with the recording of money receipts from sources other than earnings are concerned with complete reporting. From the point of view of income definition, the treatment of the two items, gifts and inheritances used for family living and capital gains and losses from property bought and sold during the year have been subjected to some criticism. The inclusion of a portion of inheritances in the computation of current family income was an attempt to dispose of this troublesome item in the balance of the current year's income, expenditures and savings. The rule of allocation, however, presented so many difficulties of interpretation that the procedure has been abandoned in the more recent survey plans. Inheritances and large gifts are now simply recorded and not included in the income total and such sums appear as a separate item in the tabulations showing the balance of receipts and disbursements. Recent survey plans have also excluded from the income account capital gains or losses from property bought and sold, during the year, chiefly because of the difficulties of unambiguous enumeration on a general family expenditure schedule. Reports on property bought and sold are entered in a section of the family balance schedule devoted to the changes in

family assets and liabilities. Interviewing is simplified if all such transactions are recorded in the same way. This change is not an improvement from the conceptual standpoint since capital gains are recorded as decreases in assets.

*Nonmoney income.* In the Consumer Purchases Study total income was defined as the sum of money income from the sources listed above and nonmoney income in the form of housing, food and fuel. The treatment of the nonmoney income has also presented difficulties in the analysis of the consumption data.

Considering all families in the country, the value of owner occupied owned homes is the most important source of nonmoney income. The general method of measurement used derives a net value by subtracting from the family's estimate of gross rental value, the current expenses for taxes, interest on the mortgage, repairs and insurance. None of the nationwide studies of family expenditures have attempted a measure of depreciation to include in the list of housing expenses. The valuation of the net value of occupancy of owned homes is complicated in the case of farm families and nonfarm entrepreneurial families whose dwellings and business premises are part of the same structure. In the case of tenant farmers the method of calculating the farm income requires an evaluation of the value of the dwelling to serve as an offsetting entry.

The method of measuring the components of farm income has led to some confusion in concept. According to one approach certain of the outlays among farm expenses include charges that should be allocated to the family dwelling and hence be recorded as family living expenditures. In the case of the Consumer Purchases Study, these outlays were some proportion of the rent, interest and taxes paid on the entire farm. Accordingly, in the calculation of total income, the addition of an estimated gross rental value of the farm home serves first as an offsetting entry, representing the portion of such farm expenses that are allocable to the family dwelling. In the case of renting families, the entire value is merely an adjustment in the calculation. In the case of owning families, the value added is a compound of an offsetting entry and the net value of occupancy of the owned home, in other words, an estimated interest in the investment in the owned farm home. This is exactly the concept used in this and other surveys for nonfarm entrepreneurial families having outlays that cover the family dwelling and business premises.

The other approach attaches all outlays for rent, interest and

taxes to the farm business. The farm family receives from the farm business a dwelling rent free. The total rental value of this housing constitutes nonmoney income in the same sense that the housing that a farm laborer, caretaker or an employee of an institution receives as part of his reimbursement for services is considered as nonmoney income.

A choice between the two approaches is not necessary when the consumption data are classified by the total income of the family, including both money income and nonmoney income. It becomes serious when the income used for classification is defined as "money income." When it is remembered that the main purpose is to obtain an income total that offers the most rational and informative basis for comparison between groups, the use of the second approach in interpretation of the value of the farm dwelling means that in classification the farm family is placed in a lower income level than the nonfarm family in a similar situation. It also leads to a general comparison of the farm and nonfarm groups which contrast the disposal of the income of the farm family after the deduction of most housing costs with the same amount of income of the nonfarm family before subtraction of the expenses for family housing. It appears from such considerations that for the purposes of classification in the analysis of family expenditures the money income defined for farm families should exclude from farm business operating expenses charges allocable to the family dwelling and such charges should be recorded as family housing expense.

According to this approach, the nonmoney income from housing consists simply of the net value of occupancy of the owned home for farm as well as for nonfarm families. Whether this element of nonmoney income should be included in the income total used for classification depends on the kind of analysis of the expenditure data. The amount added to money income representing the net value of owned homes should place the home owner in an income class with renters having equivalent purchasing power. The whole aim of the classification might be to ascertain the effect of home ownership on the general spending pattern. Such an analysis can only be accomplished by comparing owners and renters in equivalent circumstances. If the amount added to money income as a measure of the net value of occupancy of the owned home is relatively large, such an analysis leads only to the tautological result: Owning families have less money income than renting families of

the same income bracket and spend less on all categories of family expenditures.

The same type of difficulty arises when the value of food produced for home consumption is included in the income total used for classification. The comparison of two farm areas, for example, via a definition of income equivalence that includes the value of home-produced food consumed by the family may not yield any more information on the contribution of the home-produced food to family welfare than is given by the income total and its components. When the amount of production for home use in two areas differs substantially and the value of such food is included in the income total, families with a low-money income in one area are placed in the same income class with families with substantially higher money income in the other area. The comparisons of the patterns of consumption in the two areas then leads simply to a contrast between the two levels of production for family consumption. Accordingly, if the analysis seeks more than the contrast between areas in the amount of production for family consumption, a classification by a measure of money income which does not include the value of such food consumed now appears more satisfactory. By pairing the families of the same money income in two areas differing in the extent of production for home consumption, it is possible to trace through the allocation to other consumption categories and savings any difference in the amounts spent for food that can be ascribed to the home production of food.

Evidence is now accumulating that suggests that the "saving" that arises from home production is definitely limited. Beyond a certain point increases in the total value of home-produced food consumed by the family do not lead to decreases in the amounts spent on the purchase of foods. The nature of this relationship has been indicated in a discussion in the *Agriculture Yearbook, Food and Life, 1939*.<sup>6</sup> The existence of such a limiting relationship explains why the classification by an income total including the value of home-produced food does not provide a more satisfactory basis for analyses of expenditure data. A dollar's worth of home-produced food does not release a dollar from food purchases that can be spent on clothing, medical care or towards the payment of debts on the farm. The importance of the home production is that it in-

<sup>6</sup> U. S. Department of Agriculture, Food and Life, *Yearbook of Agriculture, 1939*.

creases the food consumption of the family in most cases in such a way as to assure better nutrition.

Because of these various considerations the data from the 1941 survey, *Spending and Saving in Wartime*, were tabulated by money income. The definition used, however, did not allow for the accounting adjustments for the expenses relating to the farm dwelling. It is the opinion of the authors that, in terms of our present knowledge, the most satisfactory income total for general analyses of expenditure data is a measure of money income determined by taking out of the expense side of the income account all amounts chargeable to family living. Thus, all the costs of producing food for home consumption as well as the amounts representing the cost of the family dwelling should be included in consumer expenditures rather than in farm operation expense.

*Biases in reporting income.* The problems of determining the best measure of income to associate with expenditure data would beset the investigator even though the basic data on individual reports were perfectly accurate. The greatest difficulties arise out of the two types of biases that appear to be characteristic of reports on income voluntarily given to representatives of research agencies, whether government or private. The first of these, which may be called the refusal bias, results from a higher refusal rate in the highest (and perhaps also the lowest) income brackets than among the middle income groups. The second bias, which may be named underreporting, apparently is based on the inability or unwillingness on the part of many families to give a complete report on income.

The refusal bias is of serious consequence in connection with a study having as one of its purposes an estimate of the distribution of consumer units by the amount of their incomes. At the present time the persistence of the bias is accepted as inevitable, although the magnitude of the effect can doubtless be considerably reduced by employing more elaborate methods of approaching the group of respondents drawn in a sample. Since it does not appear possible to eliminate the bias entirely, methods of correction have come into use. The chief source of data used in such adjustments is the Federal Income Tax information. The income data from the Consumer Purchases Study, 1935-36 were combined by the National Resources Committee<sup>7</sup> with data from the income tax re-

<sup>7</sup> National Resources Committee, *Consumer Incomes in the United States, Their Distribution in 1935-36*, Washington, D. C., 1938.

turns in constructing the estimates of income distribution in those years. The difficult problems of making such adjustments are now being studied by income analysts.

The income bias has a serious aspect for the analysis of expenditure data. Without a valid estimate of the number of families in each income bracket, it is impossible to obtain from survey data estimates of the aggregate expenditure for each category of consumption or for specific goods or services. To date, family expenditure studies have not been found to be a good source of data for estimates of aggregate expenditures chiefly because of the underestimate of the number of families in the higher income brackets. Since, however, estimates of aggregate expenditures are prepared from other sources, the main loss in expenditure analysis is methodological. Without a means of deriving a good estimate of aggregate expenditures from survey data, it is impossible to compare the survey results with aggregates based on other data and thus appraise the quality of reporting on expenditures.

The underreporting of income would not be serious for expenditure analysis if it could be assumed that the understatement of income was uniform throughout all types of families and all income brackets. Unfortunately it appears that such an assumption is not justified. Comparing totals of income from various sources with the aggregates as estimated by the Department of Commerce, indicates that the underestimate of income from sources such as interest and dividends is greater than for other types of income. A detailed discussion of this kind of appraisal of the income data is given in the forthcoming bulletin of the Bureau of Labor Statistics on the results of the small sample survey, Survey of Spending and Saving in Wartime.<sup>3</sup> The variations in the extent of the underreporting of income probably tends to exaggerate the level of expenditure in most income brackets. The tentative results of comparisons of survey data with other data in the aggregates indicates that the underestimates of income are largely balanced by underestimates of savings. Consequently, the expenditures of those families classified by reported income in a lower bracket would tend to raise the average above the level truly characteristic of the group having in fact incomes of that amount.

It is possible that underreporting of income can be appreciably

<sup>3</sup> U. S. Department of Labor, Bureau of Labor Statistics, Survey of Spending and Saving in Wartime, 1941 and First Quarter 1942.



reduced by improvements in the design of schedules and the techniques of interviewing. The use of a schedule that provides for a recording of income receipts in detail promises an improvement in the completeness of reporting. In the comparison of aggregates mentioned above, it was found that farm income as reported on the survey showed the least deviation from the totals derived from other sources. The schedule form in the case of farm income carried much more detail than in the case of income from nonfarm sources. The increase in the number of individuals required to report their incomes on income tax returns will probably improve accuracy of reports made to survey interviewers.

The problem of underreporting is not limited to income. Savings, as already mentioned and many types of expenditures appear to be underestimated in family expenditures surveys. It is not possible to conjecture how much of the underreporting is the memory factor and how much is due to the fact that an interview covering a year's expenditures is necessarily fatiguing. The fact that such underreporting exists in data collected by the schedule interview method challenges the investigator to re-examine or explore other means of collecting such information.

#### *Account Keeping vs. Schedule Interviewing*

All comprehensive studies of family living expenditures in this country have used the schedule interview method in obtaining information from the families in the sample. In some other countries government surveys have been based on records kept by families. At first thought it seems that a day-to-day record of expenditures should lead to a complete and accurate account of family expenditures. Examination of the limitations of this method results, however, in the conclusion that the disadvantages considerably outweigh the advantages.

It would be extremely difficult, if not impossible, to obtain such records of a year's expenditures from a random sample of the nation's families. There is always a small group not sufficiently literate to be able to keep accounts. There is always a larger group that could not be sufficiently interested in the project to persevere without continued stimulus. Accordingly, the group able and willing to keep records is self-selected and hence not representative of the entire population. None of the European studies based on household accounts with which we are familiar present data on the

method of selecting the sample, or the percentage or distribution of refusals, or any material on the characteristics of the sample as compared with the total population. Even with a group interested in the idea of household accounts the ideal of a complete and accurate record is not reached without considerable effort. A study made by the Bureau of Home Economics in 1933, "Comparison of Schedule and Account Methods of Collecting Data on Family Living,"<sup>9</sup> among farm home makers revealed that since important omissions appeared in records, record keeping as a method should not be employed except with frequent visits to the family or a continuous editing and correspondence.

Another serious element to be considered is the possible effect of record keeping on the family spending. There have been no studies designed to show whether the general expenditure pattern might be altered when the family is constantly made aware of relative magnitudes through an account. Such an analysis has been made in the case of the seven day records of food purchases kept by families for studies of food consumption and the evaluation of diets. In these studies an interviewer calls on the housewife and takes an inventory of all the food on hand, on the shelves, in the refrigerator or stored in the basement. Each day of the week the housewife recorded her purchases. The interviewer called in some cases every day, in some cases every other day to assist the housewife in making this record. At the end of the week the agent took a second inventory of all the foods in the house. The analysis of the data from one of these surveys showed a significant decrease in the inventory of food on hand at the end of the week compared with the beginning. It thus appears that the daily visit of the agent and the recording of purchases influenced the families in the survey to buy less than normal amounts and to consume more than normal amounts from their shelves.<sup>10</sup>

The possibilities of record keeping have not been sufficiently explored and the method should not be excluded entirely from consideration by investigators. Inasmuch, however, as experience indicates that the collection of expenditure data by record keeping would require frequent visits to the cooperating families during

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<sup>9</sup> Woodhouse, Chase Going and Faith M. Williams, *Comparison of Schedule and Account Methods of Collecting Data on Family Living*, U. S. Department of Agriculture, Technical Bulletin No. 386, Washington, D. C., 1933.

<sup>10</sup> Cornfield, Jerome, *On Certain Biases in Samples of Human Populations*, *Journal American Statistical Association*, Vol. 37, March 1942.

the year, the cost of this method of collection would exceed the cost of collecting the same amount of information by the schedule interview method.

In studies where the design requires that the data from individual families be analyzed separately, and there is, therefore, special need for accuracy in the separate returns the development of the record method may be required. For example, when it is desired to analyze the nutritive content of the diet of each family surveyed, to find out what proportion of those in each income bracket meet or fall below a given nutritional standard, it is generally felt that the reporting errors involved in housewives' estimates are large enough to make the use of the "weighted record" necessary, in spite of the difficulties of obtaining representative data by this method and the considerable expense of summarizing data entered in household account books, no matter how well they are designed for the purpose. When exact data are needed on the quantity of food consumed by each individual in each family a weighted record is required. The only studies of this sort made outside of institutions, with which the authors are familiar, have been carried out by investigators who entered the homes of the sample families and recorded the quantity of food placed in individual serving dishes and the quantity left when the dishes were removed from the table. The difficulties involved in obtaining representative data on this subject are obvious.

### *"Short" vs "Long" Schedule Forms*

The schedule used in an expenditure survey needs to be designed so that the respondent can give the most complete and accurate report possible. The problem facing the investigator is to devise the best form and to develop the best method of interviewing to aid the housewife in reporting all of a year's expenditures. Prior to 1935 most expenditure surveys were summarized to show family outlay for the major categories of consumption such as food, housing, clothing, fuel, transportation and miscellaneous. (The most important exceptions are the studies of the expenditures of city wage earners and clerical workers made by the U. S. Bureau of Labor Statistics in 1918-19 and of white farm families in 11 States made by the U. S. Department of Agriculture in cooperation with certain colleges and universities in 1923-25.)

If the primary purpose of a survey is to provide average expenditures for consumption categories, the investigator must determine

how much detail should be placed on the schedule to assure the accuracy of these totals. The fundamental question is how accurate an answer can the housewife give to a single question such as the amount spent by the family for clothing during the past year. If such answers were reasonably accurate, that is, if overestimates by some families tend to balance underestimates by others, expenditure surveys would require only a short schedule and a short interview.

Experience has shown that few housewives have even an inkling of the magnitude of annual expenditures for the various categories of consumption. Such totals must be reconstructed by recording the details that the average housewife is able to report. The investigator has the choice of two methods of recording the information. The interviewer may use a form with headings similar to an account book and list all of articles and services that the housewife can remember under each heading. On the other hand, the interviewer may be given a schedule form that lists most of the goods and services purchased for family consumption and the respondent is asked to report on every item shown in the schedule.

The possibility of using a short schedule form requiring reports on total expenditures by category was submitted to formal test recently by the Bureau of Labor Statistics. The test was in two parts. In the first part nine homemakers who were interested in the problem took part in the experiment. They were asked first to report their best estimate of the totals spent for expenditures in groups without reconstructing from details. Then they reported on the details listed on a long schedule form. The groups of expenditures were food at home, food away from home, housing, fuel, light and refrigeration, household operation, furnishings, clothing, automobile, other transportation, medical care, personal care, recreation, reading, tobacco, education and miscellaneous. In this experiment, the housewives' estimates of the totals proved to be less than the total developed from reports on details on expenditures in all categories except food, transportation and recreation. The test showed that the consumer does not think of his outlays in terms of such broad groupings of expenditures.

The second part of the test survey was based on interviews with about 100 housewives chosen at random. A schedule itemizing expenditures in finer groupings was used and no restriction was placed on the amount of detail reported by the housewife in making her

estimate of the amount spent for any expenditure group. The respondents reported on income and savings as well as on expenditures. Approximately one-third of the schedules did not show a satisfactory balance between income, expenditures and savings as first reported. Revisions made at a second visit to the family resulted in increases in the total spent for 10 of the major groupings of expenditures, including the relatively large group, food at home, housing, household operation and clothing and in decreases for 6 groups. This test showed that a schedule listing only groups of expenditures and not specific goods and services yields reasonably satisfactory results in terms of a balanced report. On the other hand it also showed that respondents when left free, actually reported on expenditures for specific articles and services. The interviewers found it necessary to take voluminous notes on the interview and later had to spend several hours summarizing the results on the short schedule form. The time spent on the scheduling was not substantially less than had been required in studies using the longer, more detailed schedule form.

These tests led to the conclusion that a schedule form itemizing specific articles and services purchased for family living provided the best means of recording family expenditures in interviewing. They also revealed the difficulties in obtaining unambiguous reports on certain types of questions and thus made possible improved wording and arrangement of the schedule form.

There is one important exception to the procedure of estimating expenditures for a consumption category by reviewing the purchases for the specific goods or services that are included in the group. It would be virtually impossible for a housewife to report expenditures for specific foods without reference to a record of some sort. Earlier surveys, in particular the studies of the expenditures of wage earner families made in 1888-1902<sup>11</sup> and in 1917-19,<sup>12</sup> obtained estimates of the purchases of the separate foods from families in the survey willing to attempt such a summary. Since the accuracy of such reports is subject to question, such detailed reports on the year's food expenditures have not been included in any of the later studies. The Study of the Money Disbursements of Wage Earners and Lower-Salaried Clerical Workers (1934-36)

<sup>11</sup> U. S. Department of Commerce and Labor, *Cost of Living and Retail Prices of Food*, Eighteenth Annual Report of the Commissioner of Labor, Washington, D. C., 1904.

<sup>12</sup> U. S. Department of Labor, Bureau of Labor Statistics, Bull. No. 357, *Cost of Living in the United States*, Washington, D. C., 1924.

employed a supplementary food schedule covering one week's purchases. Such reports were obtained from the participating families in each of the four seasons and the estimates of annual purchases of each food were developed from the four seasonal surveys.<sup>13</sup> In the later surveys, the Consumer Purchases Study, 1935-36<sup>14</sup> and the Study of Spending and Saving in Wartime<sup>15</sup> the detailed schedule on the purchases of food during a week was obtained only during the period of enumeration on the main expenditure schedule and thus the food data were not representative of all seasons in the year.

In order to estimate food expenditures during the year, the housewife is asked to report average expenditures during a week or a month at different periods during the year. The schedules now used provide for recording of such averages by type of store such as grocery, meat market and bakery and require a separation between amounts spent for food purchased to be prepared at home and food eaten away from home in restaurants, and other eating and drinking places.

### *Test Surveys*

The test surveys described above were the first formalized experiments of this type undertaken in connection with the development of the plans for an extensive survey of family expenditures. In a very real sense each survey constitutes a methodological test for the one that follows it. Surveys of family expenditures on a large scale were made as early as 1888 and the cumulation of experience from these surveys has contributed to a continual improvement in the schedule form and the methods of interviewing. It has been customary to "try out" each new schedule form by interviewing a few families before the form is set. Such trial interviews were, however, never, as far as we know, made part of a systematic test that could be summarized in quantitative terms until the Spring of 1944.

<sup>13</sup> Williams, Faith M. and Alice C. Hanson, Money Disbursements of Wage Earners and Clerical Workers, 1934-36, Summary Volume, U. S. Dept. of Labor, Bureau of Labor Statistics, Bull. No. 638, Washington, D. C., 1941.

<sup>14</sup> Stiebeling, Hazel K. and others, Family Food Consumption and Dietary Levels, Five Regions, U. S. Department of Agriculture, Misc. Pub. No. 452, Washington, D. C., 1941 and U. S. Dept. of Labor, Bureau of Labor Statistics, Bull. No. 648, Family Expenditures in Selected Cities, 1935-36, Volume II, Food, Washington, D. C., 1940.

<sup>15</sup> U. S. Department of Agriculture, Miscellaneous Publication No. 550, Family Food Consumption in the United States, Spring 1942. Published as a part of the Study of Family Spending and Saving in Wartime, conducted by the Bureau of Human Nutrition and Home Economics, Agricultural Research Administration, in cooperation with the U. S. Bureau of Labor Statistics, Washington, D. C.

As the data from expenditure surveys are used for more and more types of analysis, it becomes necessary to add new questions to the schedule and make certain changes in the customary list of information. Thus, each projected survey includes information on the schedule for which there may be little or no experience in the earlier surveys. The introduction of a test survey as part of the planning operation provides a basis for designing the schedule in a form to give the required information as accurately as possible.

For the systematic improvement of the techniques of collection of data on family expenditures two types of studies would be eminently desirable. In the first place if inventories of experience could be made generally available, investigators might be prevented from making the same old mistake in each successive study. Such inventories would be in themselves an analysis of the expenditure data and would rely heavily on comparison of survey total with aggregates based on data from other sources. Second, studies in methodology could be made, independent of the immediate need for their use in connection with an extensive survey.

### *Definition of Expenditures*

The classification of family expenditures required for the purposes of analysis imposes some serious difficulties in the recording of expenditures whether in a record account or in a schedule interview. For analysis, expenditures must be grouped uniformly by some criterion. On the other hand, families often and, in some situations, generally make payments that represent combinations of two or more types of expenditures which the investigator wants reported separately. The most common types of "combined" payment are, first, expenditures for goods and services that serve both family living and the family business, and, second, outlays that represent both current family living expenditures and savings.

The rational separation of family living expenditures from family business expenditures is a subject that requires considerably more attention and could well be made the purpose of the special type of study suggested above. The problem appears in the recording of expenditures for almost all farm families and for a large segment of the entrepreneurial nonfarm group. Some of the methods of allocation have already been discussed in connection with the definition of income, for the measurement of net income as well as of expenditures is affected by the definition of "family" expenditure. In addi-

tion to expenditures common to the business and the family dwelling the problem of allocation extends to the business and the family use of an automobile, and the fuel and utility charges that apply both to the business premises and the family living quarters.

Except in the case of the farm dwelling, the procedure now generally used relies on a percentage allocation estimated by the respondent. Thus in the case of automobile expenditures, the family is asked to report the total expenditures for the purchase and upkeep of the automobile and to give a percentage that represents the proportion that business use of the car is of the total. This percentage is then applied to the various components of the total, such as gasoline, oil, repairs, licenses and insurance. The subjective element in the report on the percentage allocation is clearly an obstacle to the interpretation of the results and renders difficult the comparison of the family situations in different areas or at different times. Furthermore, the division of certain purchases into the two sectors of expense results in almost meaningless figures for analysis. It is doubtful whether a comparison between areas of the portion of the amounts spent on automobile licenses and insurance allocated to the family living side of the account contributes any information leading to an understanding of differences in the use of automobiles. In the recent Survey of Spending and Saving in Wartime, the totals for automobile purchase and operation were separated between family and business use in the tabulation of the data but the details of expenditures for gas, oil, repairs and licenses were not so allocated.<sup>16</sup>

The data from family expenditures surveys would be improved if more objective methods of dividing outlays between family expenditures and business expenses could be developed. In the case of farm families, for example, special studies of the use of the automobile in representative farm areas could contribute the basis for a set of uniform rules that could be used in general surveys. Even if such studies did not attempt to provide the quantitative information required for prorating, they would contribute to the improvement of survey techniques by clarifying the meaning of such a term as "family use of the automobile" and making it possible to use the same definition for all groups in the population.

The difficulties of separating certain outlays into the parts to be

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<sup>16</sup> U. S. Department of Agriculture, Miscellaneous Publication No. 520, Rural Family Spending and Saving in Wartime, Washington, D. C., 1943.



charged to family living and to savings have proved to be almost insurmountable. In the case of insurance, an effort was made to obtain the details of insurance coverage in a study of the expenditures of Federal Employees made in 1934. This survey showed that even among the professional group, families can not within the time available in a field survey report enough information on their policies to provide a basis for estimating the division of a premium payment between insurance and the savings features. A study of family life insurance made by the Temporary National Economic Committee in 1939<sup>17</sup> showed that an intensive survey on this subject alone would be required in order to obtain an accurate allocation of the insurance premiums paid. Accordingly, the schedules used in expenditure studies require no information on the family life and endowment insurance beyond the amount of the premiums paid and the frequency of payment. Insurance payments, surrender or settlement of policies by economic bracket are certainly subjects that deserve special study independent of a connection with a general family expenditure survey.

The separation of mortgage payments on the owned home into interest and principal has become increasingly difficult for the investigator. It is clearly desirable to count the principal payment as part of the family's savings and investment program. While many families are able to report the amounts paid on principal, there are a great number unable to provide the details of the amortization payments and unwilling to give all of the information on the mortgages necessary to calculate the component parts of the payment. Payments today may also include taxes and insurance so that the recording of the details of expenditures on owned homes in family expenditure studies is being subjected to an increasing error of enumeration. Schedule forms requiring details on the mortgage are now being tried and some solution to the problem may emerge from these experiments. It is quite possible, however, that it will prove necessary to return to the simple method of recording used in surveys prior to 1934 and to effect the separation of the aggregate payments on mortgages by some national rule in the final tabulations of the data.

The separation of payments into significant components for anal-

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<sup>17</sup> Senate Committee Print, 76th Congress, 3rd Session, Investigation of Concentration of economic power. Temporary National Economic Committee, Monograph No. 2, Families and Their Life Insurance, A Study of 2132 Massachusetts Families and Their Life Insurance Policies. Washington, D. C., 1940.

ysis applies also to many parts of the family expenditure account. How should an expenditure for board and room be allocated to food and housing? How should a payment to a boarding school be divided between education, food, housing and other expenses? Can families provide a reasonable basis for the separation of a hospital bill into hospital care, nursing service and drugs and supplies? To date it has been customary when possible to obtain from the family an estimate for such allocations and in other cases to record details on the payment that would give a basis for editorial distribution into the required components. Here again, the improvement of techniques used in general expenditure studies would be greatly aided by various types of special studies.

#### *Coverage of Expenditures*

An interview with a family on a year's expenditures is time-consuming and experience has shown that in order to obtain unbiased estimates of expenditures for the main consumption categories it is necessary to record outlays for most of the specific goods and services that enter into family living. For analysis of family expenditures the value of the information on the details of expenditures cannot be overstressed. Yet to obtain reports on the details of expenditures sufficiently accurate to use in analysis means adding to the time required of individual respondents. A family, after becoming interested in the survey, may be willing to look up a few records or receipts in order to clarify entries on the schedule. There appear, however, to be definite limits within which such participation can be expected to operate.

Consideration is now being given to survey designs that reduce the burden on the individual respondent. The most promising proposal involves a set of interlocking surveys, each limited to one aspect of family expenditures. One survey, for example, would cover only clothing expenditures, another medical care expenditures. The schedules for each subject could be more detailed than the general expenditure schedule and more time could be used in interviewing without overburdening the respondent. The data from all the surveys added together would provide the pattern of family expenditures, provided the samples in each case had been carefully chosen for this purpose. In order to classify the families each survey would have to obtain data on family composition, occupation, income, residence and certain other facts.

This proposal would lead, without doubt, to an improvement in the expenditure data for each category of expenditure. Its use would mean the loss of the general criterion of acceptability of a report in the reasonable balance of income, expenditures and savings. It would also absolutely preclude any studies of the correlations between expenditures of different types among families in the same economic bracket. Furthermore, a study based on a set of interlocking surveys might prove to be much more expensive than a single survey in which the schedule covered all categories of expenditures.

The scheme of interrelated surveys could be developed in such a way as to retain the information needed for special correlation studies. A central survey using the complete expenditure schedule could be accompanied by related surveys on the more important groups of expenditures on which accurate detailed information is desired. This type of survey design has been illustrated by the use of a supplementary food survey in all of the expenditure studies since 1934. The food survey, covering a sample of the families reporting on expenditures, obtained a record of family food consumption during a week that was sufficiently accurate to allow an analysis of the nutritional content of the diets. Such supplementary surveys do not need to be restricted to the families interviewed for information on a general expenditure schedule. It is only necessary to have the samples related in such way that the data from the supplementary survey can be extended by reference to the findings of the general survey. This means that the schedules for the supplementary surveys have to carry the information about the family required for classification, such as income, occupation and family composition. The scheme of interrelated surveys is simply an extension of the "double sampling" that originated with the Consumer Purchases Study.<sup>18</sup> The many possibilities of survey design using some method of double sampling remain to be explored not only as a means of reducing the costs of family expenditure studies but also as a technique for providing accurate information on the various aspects of family consumption.

#### *Classification of Consumer Expenditure*

Many of the goods and services purchased by the ultimate consumer fall into natural groupings about which there is little to de-

<sup>18</sup> National Resources Committee, *Consumer Expenditures in the United States, Estimates for 1935-36*, Washington, D. C., 1939.

bate, and which are generally uniform from study to study. There are other items about which there has been considerable variety in practice. Some investigators have been more interested in classification by the source of the goods purchased; others in their use. Present practice tends to emphasize the kinds of goods and services purchased, rather than their use by the family reporting. Questions have arisen as to the place where amounts spent for food consumed by guests or for meals consumed by the family away from home (other than at work or at school) should be entered—under “recreation,” or under “food”; whether expense for wines and liquors should be classified with expense for “food” or with expense for “recreation.” Recent studies have included both these items with food. Similar questions have arisen over the classification of expenditures for food, lodging and carfare while travelling. The Bureau of Labor Statistics study of 1917-19, called for expenditures for excursions, vacation, and travel as separate items and the instructions for the study said to include under these items “all expenses such as railroad fare, board and lodging while away, etc. Vacations include trips for pleasure away from the city which involve a stay over one or more nights.” It is hard to imagine the heartsearchings of the housewife who had to decide whether the trip to visit an elderly uncle was undertaken for pleasure or duty. Present practice is to classify all travel under transportation without any felicific calculus, to ask for outlays for meals while travelling (except at employers expense) or on vacation as one item, to be classified under outlays for food, and for lodging while travelling or on vacation as one item to be entered under housing.

Some studies have placed outlays for luggage with clothing, others with housefurnishings. Most investigators have included jewelry with clothing expense; others have placed it with “miscellaneous” items.

The classification of expenditures for laundry and dry cleaning poses further problems. Since most dry cleaning expense applies to clothing it is usually classified with clothing outlays, and since most laundry expense, at least for moderate-income families, applies to sheets, towels and other household items, and it is impossible for families to separate their expense for these items from their expenditures for laundering clothing, it is usually classified with household operation.

The schedules used in interviewing consumers as to their expenditures are usually arranged in such a way as to facilitate the recall

of expenditures made over a period of time. When it is desired to obtain summary figures on expenditures in terms of some other grouping as for durable, semi-durable and nondurable goods, and for services, it is necessary to code each item and to resummarize the figures. The great advantage of the expenditure study that records and tabulates all of the details is that such regrouping is made possible. When the data are published in detail the results of various studies can be put on a comparable basis independent of variations in the classifications used.

### *Measurement of Savings*

In early studies of family incomes and expenditures, no details were requested on the family savings. The usual procedure was to ask for income, family expenditures in more or less detail, and then to add line which said "Surplus or deficit." The instructions for the Bureau of Labor Statistics study of 1917-1919 said

"Surplus or deficit means the difference between the income and expenses for the year. This should be asked first as an independent question, then the difference between the itemized income and expenses should be computed. If the figures arrived at by the two methods are not the same, the figures of one item or the other must be revised. The schedule when turned in must be consistent as between income, expense, and surplus or deficit. As the figures of a schedule generally must be estimated, do not show a surplus or deficit of less than \$5.00, but cover such small amounts among the items."

This procedure seems to the authors to encourage "adjustments" in the figures provided by the family to a dangerous point.

Details as to family savings were apparently obtained in studies of the economics of farm family living earlier than in studies of the economic affairs of city families, in investigations of changes in family "net worth."

The present practice in both the Bureaus of Labor Statistics and of Human Nutrition and Home Economics is to require that total receipts (including increase in money borrowed or in accounts due) should balance against total current expenditures and increase in assets within 5 percent in the case of nonfarm families and 10 percent in the case of farm families. The larger tolerance is allowed in the case of the farm families because of the complications of calculating income from farm transactions. Changes in assets and liabilities are then requested in detail when the survey attempts to cover the whole range of the family economic situation. The studies of the mid-1930's devoted an entire page to changes in assets and

liabilities. This procedure provides valuable data as to amounts spent on repayment of mortgages, increases or decreases in amounts owed on installment debts, or to small loan companies, purchases of stocks and bonds by consumers in different income brackets. It encourages the interviewers and the families who cooperate in consumer surveys to look over the entire schedule for possible errors, when the figures first obtained do not balance within the prescribed limit of tolerance instead of taking the difference between the figures first recorded in the income and expenditure sections and calling it "surplus" or "deficit."

As noted below, the aggregate figures on savings obtained in family expenditure surveys are considerably below other estimates on the subject. The apparent underestimation indicates that families either forget amounts they have saved, or that they are more reticent about savings than about expenditures, or a third possibility, that having for one reason or another underreported income, they find it more convenient to scale down on savings when the interviewer points out that total receipts or total disbursements are out of balance.

Interest in the detailed information on family savings from family expenditure surveys has been increasing rapidly. Such information is of value not only in relation to a special subject such as installment financing but also in relation to the analysis of family expenditures. The data on changes in family assets and liabilities obtained in the three surveys, the Study of the Money Disbursements of Wage Earners and Lower-Salaried Clerical Workers, the Consumer Purchases Study and the Study of Spending and Saving in Wartime may be considered as experimental in character. The schedule form, in the case of the first two surveys, had to be developed without reference to any extensive background experience and in the case of the third, before sufficient analysis had been made of the results of the earlier studies. This particular part of the record of family financial transactions present serious problems of schedule design and interviewing. In order to provide detailed information of analytical value many changes will have to be made in the schedule form as it pertains to this subject. The character of such changes, however, awaits further study of the data along the lines of the analyses of the information on installment financing.<sup>19</sup>

<sup>19</sup> Bernstein, Blanche, *The Pattern of Consumer Debt, 1935-36. A Statistical Analysis*, National Bureau of Economic Research, New York City, 1940 and Revis Cox, *Installment Buying by City Consumers in 1941*, U. S. Bureau of Labor Statistics Bulletin 773, Washington, D. C.

*Estimates of Total Consumer Expenditures*

Comparisons of data on aggregate consumer income and expenditures obtained by the most recent complete field survey on this subject (the Study of Spending and Saving in Wartime in 1941) with the estimates of the Department of Commerce for that year, although difficult to interpret, give the best basis for appraising the completeness of reporting in surveys. The Department of Commerce figures are based in large part on the Census of Manufactures and on reports of retail sales which are used in combination with data from the Department of Agriculture and many other sources. None of the material included in the Commerce estimates is based on information obtained directly from consumers except the value of food and fuel produced and consumed on farms, and the value of owned homes and tenant-occupied farm homes. The figures on the aggregate money income of consumers from the survey of Spending and Saving in Wartime represents 88.7 percent of the Department of Commerce figure for income payments in 1941.<sup>20</sup> The survey figure on total consumer expenditures (including goods and services received in kind) is about 93 percent of the Department of Commerce figure.<sup>21</sup> (The material on housing in the two sets of figures is presented so differently that it is impossible to calculate comparable figures on *money* expenditures for this reason alone, without going into the data which lie behind the final estimates.)

The relationships between the national estimates from the two sources vary considerably among the various groups of goods and services. Some of the differences are relatively easy to explain, the reasons for others remain to be explored.

The survey figure on money expenditures for food is about 94 percent of the Department of Commerce figure. The survey figure on the value of food received in kind is almost two and a half times the Department of Commerce figure. The difference in the figures on value of food in kind occurs primarily because the Department of Commerce uses an estimate of the value of food produced and

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<sup>20</sup> U. S. Department of Labor, Bureau of Labor Statistics, Survey of Spending and Saving in Wartime, Family Spending and Saving in Wartime, Bulletin in preparation.

<sup>21</sup> Shaw, William H., Consumption Expenditures, 1929-43, Survey of Current Business, June 1944.

consumed on the farm from the Department of Agriculture which is based on the prices which farmers receive. The Bureau of Human Nutrition and Home Economics used an estimated average retail price in the valuation of the food produced on the farm for family consumption. Another and less important reason for the difference in the estimates is that Department of Commerce figure does not include the value of food raised by nonfarm families for their own use.

The survey estimate of clothing expense is about 91 percent of the Department of Commerce estimate. One important reason for the difference is to be found in the figures on expenditures for jewelry. Both these figures include jewelry under clothing but survey figure excludes jewelry purchased for gifts to persons not members of the family. The survey figure for expenditures on jewelry is nevertheless strikingly low. Perhaps, as a people, we inherit from our Puritan ancestors an uneasy feeling that expenditures on jewelry are unduly frivolous, and find it easy to forget them when faced with an interviewer and an expenditure schedule.

The survey estimate of the value of housing, fuel, light and refrigeration to consumers in 1941 is substantially larger, about 20 percent, than the Department of Commerce estimate. In this case, as noted above, it is, at present, impossible to give an explanation for this difference.

In general, the aggregates based on the survey data are lower than those estimated by the Department of Commerce. The reasons for these differences are now being explored for the purpose of revealing the deficiencies in survey techniques that can be eliminated. The primary problem is concerned with associating a discrepancy with underreporting of expenditures or with the greater refusal rates in the higher income groups. The data quoted from the 1941 survey had been adjusted for the sample bias due to refusals on the basis of information contained in the sampling records of the survey. This adjustment may not have completely eliminated the error arising from this source. In order to interpret a discrepancy as underreporting, it is necessary first to make the maximum reasonable allowance for the sample bias. The complete analysis of the comparison of the two types of estimates of consumer expenditures will add considerably to our understanding of the problems of obtaining satisfactory data in family expenditure surveys.



*Prospect 1945*

It seems clear that, in the process of finding solutions to the economic problems that will be raised during the reconversion period, we shall need to develop our techniques of obtaining data on the factors affecting consumer expenditures at different income levels in the United States and in the other countries which are rebuilding their economies after the economic maladjustments of the war period. We need techniques for getting reports on over-all changes in consumer expenditures by income level for the total population of an area, which will yield results which can be used for administrative purposes in a relatively short time after the period to which the data apply. We need improved techniques for obtaining figures on the details of consumer expenditures by income level, occupational group and regions within an area, which will necessarily take a longer time than the over-all picture and yet which must be supplied within a relatively short interval. In the opinion of the authors, the improvement of techniques for obtaining data on consumer expenditures will require some controlled experiments in which different collection methods are used with samples of the same size and character drawn in urban and rural areas. Except for the small experiments conducted by the Bureau of Home Economics in 1926 and 1927 and by the Bureau of Labor Statistics in the Spring of 1944, there have been no studies undertaken simply for the purpose of testing the results obtained by different methods. The subject of variations in consumer expenditures by income is now generally recognized to be of such great importance that it seems likely that the need for improving our research techniques in this field will be recognized after the military victory is won. After we have accomplished the defeat of the Axis powers, we shall have another war to wage, the war against want, and a knowledge of the factors which affect consumer expenditures and of the relation of such expenditures to the well-being of the world's population will be one of the weapons that must be used in fighting the war. It is the responsibility of the social scientist to see that this weapon is well made.

## NOTES ON "POOR LAND," AND "SUBMARGINAL LAND"\*

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WE AS a nation seem to have come into a situation where careless talk about *poor* land, *submarginal* land, and the like, may lead us into mistakes in policy that may plague us for generations. "There is no use talking," remarked one farm economist, "about *improving* the practices on the farms in the south-eastern corner of our state. It's just poor submarginal land and nothing can be done with it that will make it yield a decent living for its inhabitants." From another state: "The difficulty with the rehabilitation loans made in our state is that they have mostly been made on poor land that nobody should try to farm anyway." From still another: "The Soil Conservation Service has been trying to reclaim and get back into agricultural use a block of land in our state that is so completely run-down that it should simply be left to grow up into trees. To put families on it is only to deceive and persecute them."

The report of the Special Committee on Postwar Policy of the Association of Land-Grant Colleges and Universities speaks in terms of "reasonably productive land," or "land that can easily be made productive." It disapproves of making rehabilitation loans to keep families on "unproductive, uneconomic farms if there are better opportunities elsewhere." In the discussions before the Colmer Committee in Chicago, however, the terms "poor" land and "good" land were used freely; also the terms "efficient farmers" and "inefficient farmers."

Confused by the promiscuous use of the classification *poor land*, the writer asked one of its users for a definition of it. The reply was: "It's simply land of low productivity per acre." *Gross* or *net*, was the next question. "Well, *net*, of course" was the answer.

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\* The writer was assisted in the preparation of this article by eight different persons in the Department of Agriculture and at the University of Illinois, not all of whose names are cited in the footnotes and in the text. He could not have written the article without their assistance. In particular, he is indebted to Professor L. J. Norton and Professor R. S. Smith of the University of Illinois. Neither of these men nor any of the others is responsible for any statements in the article, particularly not for the interpretations and recommendations of measures. The writer was assisted by the staff of the Committee on Research in the Social Sciences of Harvard University. This is Publication Number 14 in the publication series of the Seminar on Agricultural Policy in the Littauer School of Public Administration.

"Then all the ranch lands of the country are poor land," the writer remarked. Reply: "I wouldn't say that. They are fertile enough. They just don't have enough rainfall to be very productive."

"But they yield some pretty good incomes for their operators," the writer insisted. The average incomes year-in and year-out of the cattlemen and sheep raisers are higher than those of the dairymen and corn-and-hog farmers. For that matter, so are the incomes of the wheat farmers of most sections.

### *Area and Productivity*

Further questioning made it clear that this farm economist was thinking of productivity mainly as if it was a matter of the chemical plant nutrients in the soil, and also as if it must be *measured only by the acre*. Let us take up the second of these first. It should be obvious that for much economic analysis, productivity needs to be measured *per man unit* and not *per acre*—in terms of *the net product from the amount of land that one man can handle*. For taxation and related purposes, and no doubt some others, we need to use net product per acre as a measure. But we should not carry this unit of measurement into analysis where it does not fit, such as analysis of farm incomes, or size of operating units, or as we shall see later, submarginality.

Area as such has much significance, of course. If to get a given volume of a certain product, farm equipment has to travel over twice as much land surface on one farm as upon another—to turn over, or disk, or seed, or cultivate, or harvest twice as many acres—the inputs of all the cost factors are larger; they can be twice as large. But with the great cheapening of power that has occurred, increasing speed of travel, and rubber treads, area is far less important than it was. The number of plows, disks, or harrows, hitched to a tractor, can be doubled and the larger area covered in the same total time. The cost of the extra investment in equipment that might be needed has been reduced by the lowering of interest rates.

Often, moreover, the products of the two farms will not be the same. The "poorer" land may be farmed less extensively than the other. More of it may be in pasture and less of it in crops, or more of the crop land may be in small grain and hay and less in row crops. Under these circumstances, the inputs will be less per acre along with the outputs—not enough to leave the same net product

per acre, but commonly enough to yield the same net product per unit of labor, capital and management. At least, this appears to be the situation when we compare farming in the dairy regions and the Corn Belt with that in the Great Plains.

### *Two Illinois Counties*

When "poor" land and the "good" land are found in the same general territory, with the same climate and rainfall, they may grow about the same crops and support about the same livestock, although probably in different proportions. An example of this kind appears in a table that is published in the recent report on *A National Postwar Fertilizer Policy*, published by the National Planning Association.

According to the figures in this table, an acre of average Douglas county soil has around twice the minerals and plant nutrients found in an average acre of Jasper county soil, and the yields per acre are around twice as high; and the gross value of product of the Douglas county farms averages nearly four times that of Jasper county farms, even after allowing for the value of the produce used by the farm families, which was a little higher in Jasper county.<sup>1</sup> Per acre, the differences in value of product are somewhat less, because the Douglas county farms average a third larger than the Jasper county farms.

These counties were especially selected by the Bureau of Plant Industry, Soils and Agricultural Engineering of the United States Department of Agriculture, with the help of the soil scientists of the University of Illinois, in order to show the effect of differences in soil fertility on agriculture and its people. (They recognized, of course, that other soil factors than fertility contribute to the productivity of land.) These two counties lie closely together, with only two counties between them. Douglas county is the next county south of Champaign county, where the State University is located. It lies in what was called "the cash-grain area" of central and eastern Illinois in the 1930 type-of-farming survey. At that time, 61 per

<sup>1</sup> Averages in such a situation are deceptive. We are concerned here primarily with the uplands of the two counties. The Cisne silt loams of Jasper county, the dominant upland type, have three times higher yields than the Flanagan silt loams of Champaign county. According to Professor R. S. Smith of the Illinois Agricultural Experiment Station, the average yields of the Cisne silt loams, 1912-43, were—corn, 11 bushels; oats, 9 bushels; and soybeans, 7 bushels. In a corn-and-oats rotation, the Flanagan soils averaged, 1904-40—corn, 34 bushels; oats, 34 bushels; and in a corn-oats-clover rotation—corn 47 bushels; and oats, 49 bushels.

cent of the farms in Douglas county were classified as *cash-grain*. This means that 40 percent or more of the gross value of their products was obtained from sales of corn, oats, and/or wheat. If such a classification were made today, of course, soybeans would figure largely in the cash receipts. Only 11 percent of them were

TABLE 1. SOIL FERTILITY AND AGRICULTURAL WELFARE IN TWO ILLINOIS COUNTIES<sup>a</sup>  
(Compiled from Illinois Soil Survey Reports and U. S. Census of 1939)

	Unit	Jasper County Low Fertility	Douglas County High Fertility
<i>Soil Analysis</i>	lbs. per acre <sup>b</sup>		
Organic matter		43,100	96,500
Nitrogen		2,600	5,000
Phosphoric acid		1,700	2,750
Potash		30,000	42,000
Calcium		5,500	12,000
Magnesium		4,500	10,000
<i>Farm and Equipment—Average per farm</i>			
Land	acres	120	184
Land and buildings	dollars	4,040	24,080
Farm machinery	dollars	400	1,530
Tractors	number	.33	.97
Electricity in homes	percent	13	36
<i>Crop Yields—per acre</i>			
Corn	bushels	34	54
Oats	bushels	18	31
Soybeans	bushels	12	28
<i>Farm Income—per farm</i>			
Farm products sold, traded, or used at home	dollars	965	3,530
<i>Education</i>			
Adults attended high school	percent	7.8	23.4
Adults attended college	percent	3.7	6.4
<i>Relief</i>			
Farm labor force employed by WPA	percent	5.5	2.8

<sup>a</sup> Smith, R. S. and Smith, L. H., "Jasper County Soils," Illinois Agricultural Experiment Station, Soil Report No. 68, 1940.

Smith, R. S., DeTurk, E. E., Bauer, F. C. and Smith, L. H., "Douglas County Soils," Illinois Agricultural Experiment Station, Soil Report No. 43, 1929.

<sup>b</sup> Surface soil in one acre equals 2 million pounds.

*animal-specialty* farms—that is, farms in which 40 percent of the income was derived from the sale of hogs and/or beef cattle. Of the remaining 28 percent, 18 percent were classified as *general* farms—that is, mainly farms whose income was distributed more or less equally between sales of cash grain and sales of livestock.

Jasper county, in contrast, lies in that southern third of Illinois which is described by the soils men as having a tight claypan.

(These soils are now called Planosols.) Around thirty percent of the area of Jasper county was timbered when the white man came, and only ten percent of Douglas county. Moreover, the Prairie soils of Douglas county supported a much heavier and taller growth of grass.<sup>2</sup> The upland soils of Jasper county are thoroughly weathered and badly leached, whereas those of Douglas county are slightly weathered. This largely explains the differences in the amount of organic matter in these soils.

TABLE 2. LAND USE IN TWO ILLINOIS COUNTIES, 1940  
(County Averages)

	Douglas County		Jasper County	
	Acres per farm	Percents	Acres per farm	Percents
All land	184	100	120	100
Crop land	139	76	66	55
Pasture	21	11	28	23
Woodland	5	3	6	5
Crop failure and idle	11	6	8	7
Other	8	4	12	10

Table 2 shows the effect of the difference in land types on the use of the land. Considerably more of Douglas county is in crops and less of it in pasture. When the farm organizations are examined in detail in Table 3, it will be seen that the same crops are grown in both counties and the same livestock are raised, but the proportions vary greatly, especially in 1940. Douglas county is now mainly given over to the growing of corn and soybeans. Part of the grain is fed to hogs and cattle. The Jasper county farms feed relatively few hogs. About all of the grain is fed to the cattle and workstock and to the sizeable farm poultry flocks. Only 1 per cent of the farms in Jasper county were reported as *cash-grain* in 1929 and only 9 percent as *animal-specialty*. The largest classification was *general*.

<sup>2</sup> Dr. Charles E. Kellogg, Chief of the Division of Soil Survey, to whom I wrote for information about these soils, reports as follows: "The soils of Jasper County are said to have, generally, tight claypans. In our more recent system of classification, these are included with the Planosols. By interpretation from the old map, it seems that around 60 percent of the area consists of Planosols developed under grasslands and around 20 percent of Planosols developed under timber. The remainder of the area consists of wet soils, alluvial soils, etc. In Douglas County, about 56 percent of the soils are included with the Prairie soils quite similar to those of the Morrow plots; about 31 percent are included with the Wiesenboden, wet soils developed under grasses, of which about 15 percent do not underdrain readily and are not very productive: then about 10 percent were developed under timber."

with 49 percent; 20 percent were *poultry* farms, and 9 percent were *self-sufficing*.

It is interesting also to note at this point the strong shift toward soybeans in Douglas county between 1930 and 1940, at the expense of oats and wheat, but also to some extent at the expense of corn. The shift to soybeans in Jasper county was very mild up to 1940—it has been more since. The increase in soybean acreage in Jasper county before 1940 mostly came out of pasture, but some of it came out of hay.

TABLE 3. FARM ORGANIZATIONS IN THE TWO ILLINOIS COUNTIES, 1940

	Douglas		Jasper	
	Acreage of land in different crops		Acreage of land in different crops	
	1940	1930	1940	1930
Corn	57.3	68.8	25.2	21.2
Oats	14.5	34.3	6.4	4.3
Wheat	6.4	15.3	2.4	1.7
Soybeans	51.2	7.5	10.5	2.6
Hay	7.4	9.5	15.3	20.8
Broomcorn	2.7	1.8	0.5	0.3
	Head of Livestock		Head of Livestock	
Horses and mules	3.0	5.2	2.7	3.3
Cattle and calves	9.4	7.8	7.2	5.6
Cows for milk	4.0	3.6	3.5	2.8
Sows and gilts	3.6	3.1	1.7	0.7
Sheep and lambs	2.2	2.0	3.7	4.3
Chickens	85	93	125	132
	Investment—value		Investment—value	
Land	\$20,400	\$21,200	\$2,830	\$2,820
Buildings	3,680	4,030	1,210	1,450
Machinery	1,530	1,220	400	330

The average Douglas county farm was valued at seven times the average Jasper county farm—land values reflect net rather than gross product. The data in Table 1 indicate that in 1940 only a third of the Jasper county farms had tractors. This means that considerable of the feed produced is used to supply the farm power. Douglas county farms shifted strongly toward tractors during the thirties. Jasper county farms have been buying tractors more freely in recent years, but can not be expected to go far in this direction as long as their farms remain small.

Surely these two counties can serve to illustrate the difference between "poor" land and "good" land, between "unproductive, uneconomic" land and "productive" land. According to the state-

ment in the report on policy of the committee of the Land Grant College Association, no one should stay on unproductive land "if there are better opportunities elsewhere." Given the "full employment in non-agricultural industry" which this report says is necessary to a prosperous agriculture, at least half of the farm families in the county should be able to obtain much more remunerative jobs in the cities at union wages. After all, the \$965 of gross value of products, including products used by the farm household, is only an average. This means that more than half of them were earning less—since all farm income distributions are strongly skewed to the left.<sup>3</sup>

But if the population now on this land should abandon it, what would become of it? It is a good guess that the land would not be abandoned, that the grass which would grow upon it would be grazed or used for hay, and that those using it in this way would in time make farm incomes comparable with those in other grazing areas.

Surely there is a suggestion in this that *what this land mainly needs is a system of land use that is suited to it*. Let's consider this possibility for a space:

First, we might consider simply putting as many acres of land in a Jasper county farm as in a Douglas county farm. If that alone were done, and the necessary additional livestock and equipment provided, and the farm operators were equal to the task of managing this larger enterprise, the \$965 of value of product would be raised at least to \$1480. Part of them surely would be equal to the task.

But this step would fall far short of equalizing the soil resources used *per operator* in the two counties. If the operators of the Jasper county farms were given as much organic matter to manage as the Douglas county farmers, they would need 410 acres of their kind of land; to have the same amount of nitrogen, 350 acres; of phosphoric acid, 300 acres; of potash, 260 acres; of calcium, 400 acres; of magnesium, 410 acres. A roughly weighted average of these figures is 380 acres. Given soil resources of this amount and the necessary livestock and equipment to go with it, and again assuming the necessary managerial capacity, the \$965 would be raised to \$3050.

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<sup>3</sup> No doubt some of these families had sizable earnings at nonfarm work. This means that they had already partly given up farming.



Such a conclusion, furthermore, assumes farming the 380 acres in the same way that the 120 is now farmed—even continuing to do the work in large part with horses as now. This would mean keeping about eight horses on these farms. Surely tractors would be much more economical. Surely also, given 380 acres, the operator would keep more of his land in hay and pasture, and grow less corn. His gross income would be reduced, but his expenses would also. To be sure, this land is harder to work than the Douglas county land, and there are fewer days when it can be worked. But the main point is that it should not be worked as much; it should be used in ways that require much less plowing and cultivating. Such tillage as is needed can then be done cheaply and expeditiously these days with modern tractor equipment.

But this is not the end of the possibilities. The University of Illinois bulletin on the Jasper county soils outlines systems of management for the dominant soils in the county which involve the use of lime and phosphate and sweet clover to bring up the organic matter, more barnyard manure from the herds of cattle, and furrows and open ditches to carry off the surface water from the nearly level fields, that will even increase the yields of corn and small grains importantly. Unfortunately the bulletin does not say very much about what good soil management will do for hay and pasture, which obviously is strongly indicated for such land. It does say that if barnyard manure is not available in sufficient quantity, potash can be supplied commercially.

More recent research in Illinois and Indiana has shown that those soils are more responsive to heavy fertilizations, especially with potash, than formerly realized. In Indiana, excellent results have been obtained from plowing under the fertilizer or adding it to the plow sole through an attachment on the plow. The fundamental difficulty with these soils for most crops is not so much their fertility as it is their physical structure. Their leached condition can be corrected, but not their structure. Their claypan is only very slightly permeable to water, with the result that the soils are likely to be too wet and soggy part of the time, although the surface will dry out in summer. Since these conditions are unfavorable to the penetration of roots, the roots may find themselves limited to relatively dry soil in the summer. Not only that, their feeding area is much restricted. This is why concentration of heavy fertilization in the whole surface soil gives such a great response. Much of what

used to be called "firing" of the corn, which was laid to drought, is now known to be due to nitrogen deficiency. Thus with heavy fertilization and maintenance of organic matter, including the growing of deep-rooted legumes, these soils are apparently more responsive to management than previously supposed.

Some of the discussion of the problems of this land by soil scientists leaves the writer rather cold. It seems to measure its possibilities in terms of annual crops, even cultivated crops like corn, and of the fertilizer necessary to bring up their yields to satisfactory levels. As Dr. L. J. Norton writes from Illinois, we should be thinking instead of the widespread use of plants that are suited to the conditions found on these soils—of lespedeza as a legume pasture crop, of soybeans instead of corn, and of continuing use of timothy and redtop until the soil is brought into condition to grow sweet clover.

What do all these possibilities add up to? Dr. F. W. Parker of the Bureau of Plant Industry, Soils and Agricultural Engineering who helped select Jasper County for this comparison, has expressed an opinion that if this land is handled as it should be, considerably less than 380 acres will produce as large a net income as now earned on 184 acres of Douglas county land. Before a real judgment could be ventured, one would need to set up budgets of receipts and expenses with units of various sizes, and representing promising alternative systems of farm organization, using the best available, and probably inadequate, input-output data, and then test these data against several years of operations. But whether the prevailing size of the unit should be 200 acres, or 240, or 300, and whether the net income would be \$2,000, or \$3,000 or \$4,000, is beside the point. Any one of these results would substantiate the argument here made that this land is not *unproductive* after all. It is *poor* land in the sense that its product per acre is relatively low. But its product *per man* need not be low. What is mainly wrong in Jasper county is that its land is being *poorly utilized* at present—that is, not being combined with human resources in such a way as to yield a good return to the human agent.

After the foregoing was written, Dr. Norton called attention to a recent study of Cumberland county, which lies between Jasper and Douglas, but which has large expanses of the same claypan soils as Jasper's. The conclusions as to policy reached in this study differ somewhat from those in this article, but that the interpretation of

the facts is very similar, is borne out by the following sentences taken at random from this bulletin.<sup>4</sup>

"Cumberland county has the various kinds of soil and topography which are commonly found in the claypan region. These include prairie and timber soils that are low in productivity and nearly level; rough hilly lands adjacent to streams; and large areas of river-bottom land. . . . Except in the bottomland, the soils of the region are old, mature, silt loams, badly leached and strongly acid. They are usually gray and have developed a claypan within 2 feet or less of the surface on the nearly level areas. (p. 278)

"A relatively high proportion of farms in Cumberland county are small. . . . Soils of low productivity of course mean low income per acre; when low productivity is combined with small size, very low incomes result. In 1939, 68 percent of all the farms in Cumberland county produced gross incomes of less than \$1,000. (pp. 278-9)

"The hilly area, which has the poorest soils and the most broken topography, also has the smallest farms, averaging 121 acres. In contrast, the most productive areas (river-bottom and dark-gray prairie) have the largest farms, averaging 204 and 210 acres. (p. 291)

"The use made of the crop area appeared to have little relation to the productive capacity of the land. Corn was the outstanding crop in each area, occupying from 38 to 54 per cent of the cropland. (pp. 293-4) . . . Though cropping practices too intensive for the soil were found everywhere in the county, they were most common on farms with a small crop area. (pp. 295-6)

"While a fairly large proportion of the farmers on the largest farms followed good management practices, this proportion diminished rapidly as the farms became smaller. On the small farms, where the best practices are most needed, there was a dearth of good practices." (p. 297)

### *Social Factors*

The origin of the maladjustments in Jasper county becomes a matter of major importance when one sets about determining future policies. The explanation is probably more sociological than economic. Dr. Norton writes that, "No part of these two counties was homesteaded into typical 160-acre tracts. They passed out of

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<sup>4</sup> Ross, R. C., V. B. Fielder, and G. H. Walter, *Farming in Cumberland County, in the Claypan Region of Southern Illinois*, Illinois Agri. Exp. Sta. Bull. 506, 1944.

government ownership before the Homestead Act was passed. Jasper County was, I think, settled in small farms by people from Kentucky, southern Indiana and Ohio, including Scotch-Irish, English and German stocks. I suspect the typical tract bought from the Land Office was 80 acres. Farmers with capital definitely did not settle in this area. Douglas County, on the other hand, was included in the Illinois Central lands. The county was swampy and I believe was originally sold in larger tracts than in Jasper County. This swampy character, plus the large capital requirements for drainage, played a large part in determining the present size and tenure pattern of the holdings."

In 1880, the Douglas county farms averaged 130 acres, and the Jasper county farms averaged 117 acres, almost the same as now. The size-groups with the most farms in Douglas county are those centering around 160 acres and 320 acres. In Jasper county they are those centering around 80 acres and 120 acres. One-fourth of the farms in Jasper county are under 50 acres, and only one-eighth of those in Douglas county. At the other end of the range, one-third of those of Douglas county are over 220 acres and only one-eighth of those in Jasper county.

It is also pertinent that 54 percent of the farms in Douglas county are rented and 20 percent are part-owner farms. All told, 71 percent of the land in Douglas county is rented. It thus has tended to pass into the hands of well-to-do persons not on farms. In Jasper county, only 30 percent of the farms are rented and only 50 percent of the land.

Characteristically enough, also only 33 percent of the Jasper county owner-operated farms are mortgaged as compared with 60 percent of those in Douglas county. Cheap farms are less likely to be mortgaged than expensive ones. The average mortgage in Douglas county is nearly five times that of the average mortgage in Jasper county.

In the parts of the United States more west and north, the land was taken up in 160-acre homesteads mostly. These homesteads tended to be split in the early decades after settlement. Homesteads were frequently divided to provide for the sons of those days who wanted to be farmers in their home counties. This process was commonly carried further in the less productive areas than elsewhere, for more farmers' sons have become farmers in low-income than high-income areas in this country—they have received less educa-

tion and fewer of them have become lawyers, doctors, preachers and the like. Not only has there tended to be less migration from the lower-income areas, but the families have tended to be larger. Although Jasper and Douglas counties did not start with 160-acre homesteads, the later stages in their histories have followed the usual pattern.

At any rate, in whatever section of this country one looks around, one *tends* to find the farms smaller on the "poor" land than on the "good" lands. The differences become more pronounced when part of the land was formerly timbered and part not. Clearing 160 acres of timbered land was a big undertaking for one family, and the timbered land usually had less natural fertility than the open-prairie land.<sup>5</sup>

### *Size of Farms*

The authors of the Cumberland County report conclude that one half of the farms in the county now "provide an adequate income," which, however, "could be increased by better management." Another fourth, although they are small and have soils of low productivity, could be made to support a family adequately "if the soil were better managed and better methods of crop and livestock production were used." Only one-fourth are "so small or so unproductive that they never could be made to yield a satisfactory living for a family." (p. 312-3)

The writer has no urge to quarrel with the desire of the folks at Urbana to take care of as many of their present farm families as possible on farms. It seems to be the normal inclination of professors of agriculture as well as of Congressmen. But a few things about such a proposal are a bit disturbing. The first is that the families undertaking to make a better living on the small farms, particularly those in the first fourth named, will be in great danger of trying to do this by putting too much land in corn and soybeans, and of farming too intensively generally. What is envisioned for them apparently is a program of high yields of the crops returning a rela-

<sup>5</sup> There are important exceptions to this general tendency in the South. For example it is pointed out that in the Southeast, the better farms and farmers are often found on the "second-class" soils rather than on the "first-class." The reason is that the most responsive and productive land was taken up first in relatively large holdings, later settlers who wanted to establish homes and had only a small amount of capital were forced to do so on less desirable soils. They have prospered, in many cases, as owner-operators who have looked to the future of their own land; whereas some of the land first taken up has been farmed under a year-to-year tenant system with less efficiency and with practices that have not maintained the soil productivity.

tively large output per acre, and maintaining their land at a high productivity level. If a family has only a small tract of land, and no chance of getting any more, its only way of getting a larger income is to farm more intensively what it has. But it would commonly obtain more income with less effort on additional land.

The second disturbing thought is that of having in such close juxtaposition a group of 1850 farm families operating 153 acres of "poor" land and having gross values of product of perhaps \$2,000, allowing very liberally for gains from improved methods,<sup>6</sup> and in another a group of 1358 families on 184 acres of highly productive land, with values of product of \$3530. It is true that these counties have existed side by side with even greater disparities for several generations and no revolution has ensued. But apparently a good many persons have been unhappy about the conditions in counties like Jasper and Cumberland. And now they make some policy recommendations to the effect that the disparity be reduced from \$2700 to \$1500 by enlarging a fourth of the farms and intensifying the farming on the others. Only a heretic would dare suggest the alternative possibility of intensifying the farming on the more fertile Douglas farms instead—perhaps splitting some of the larger of them into 80's and selling them to tenant purchasers!

The writer holds no brief for 380-acre farms in Jasper county; nor for any size of farms in Douglas county. Perhaps under a proper adjustment of land to human resources over the whole country at some future time, Illinois farms will average smaller than now. Perhaps instead, farm sizes in some other areas will rise to the Douglas county level. The only issue here in question is *relative* size in the two counties. On what basis, other than social expediency, can one propose farms and incomes almost twice as large in one county as in another?

It has been intimated above that efficiency of management may be an important factor in such situations. Most agricultural economists are familiar with the theory that poor land and poor farmers tend to get into combination with each other, and likewise good land and good farmers. The usual explanation of this is that the better farmers are able to obtain enough larger net products from the good land than the less efficient farmers to be able to buy or

<sup>6</sup> If one-fourth of the smallest farms in Jasper county in 1940 had been divided among the others, the average acreage would have been raised from 120 acres to 153 acres. Similarly, if one-fourth of the smallest value-of-products had been distributed among the others, the average would have been raised from \$965 to \$1370.

rent it away from them. The writer is disposed to accept this theory as valid as far as it goes. But it is a theory that can easily be misapplied. Capacity for management is not fixed and immutable, especially not that of young men on farms. It has been the American experience that the native intelligence of the young people who come out of the low-income rural areas compares rather favorably with that of those who come out of the more prosperous rural areas. The disabilities which limit managerial capacity are mainly cultural and can be overcome.

One would not, however, want to convert all of the present operators of 120-acre farms in Jasper county into managers of 300-acre farms, and certainly not at one simultaneous move. If a program were worked out under which those with the most industry and enterprise were helped to obtain additional land and capital, and at the same time assisted in developing operating plans for these larger units, as is now done with the tenant-purchasers under the Bankhead-Jones Act, within sixty years as much of Jasper county would be in larger economic units as is desirable in any balanced farm organization pattern. Always some fraction of the farms need to be small holdings, part-time farms and the like.

The problem of farm sizes needs to be looked at in larger setting than these two Illinois counties. A few professors of farm management have made such dogmatic statements about the need for larger farms that they have driven many of their contemporaries to the other extreme. Some of the latter of these are likely, after reading the foregoing notes, to rise up and blast the author of them; and insist that until we have tried out giving the people on the mountain and piedmont farms a chance to farm their present land as it should be, we have no basis for urging more land on them.

This is essentially what Congressmen Tarver of Georgia and Doughton of North Carolina said in the House hearings on the agricultural appropriation bill in 1942. One might, for argument's sake, agree that farm land in Georgia, North Carolina, and in the South generally, is more productive per acre than land in Iowa, Minnesota, Wisconsin or Vermont, because of a longer growing season, more rainfall, soils of greater capacity to use fertilizers, or for any other reason that might be advanced. He need have no compunction about agreeing that the productivity of the southern lands could be notably increased by better farming methods! But could he go as far as Judge Tarver would apparently have him go

and say that North Carolina lands are, or could be made to be, 6 times as productive as Iowa lands? 3 times as productive as Wisconsin lands? For Congressman Doughton's Ashe county, the figure would have to be 10 times as productive as Iowa lands. This is what he would have to believe if he expected the North Carolina farm folks to live as well as their northern brethren in these two states. If these comparisons are expressed in terms of farm workers as reported in the 1940 census, the North Carolina-Iowa figure is still about 7 to 1; and the Wisconsin comparison falls to 2 or 3. The mountain county of Knott, Kentucky, stands at about the extreme position for the South. Following are the data that support these statements:

	Per 100 acres of cropland <sup>a</sup>	
	Rural farm persons	Farm workers
North Carolina	26.7	7.7
Ashe County	45.9	11.8
Alabama	18.0	5.4
Marion County	22.2	7.1
Kentucky	23.3	6.3
Knott County	75.1	16.8
Iowa	4.5	1.7
Hamilton County	3.7	1.3
Wisconsin	8.8	3.3
Dodge County	6.5	2.5
Vermont	10.2	3.6
Addison County	7.0	2.4

<sup>a</sup> Acres harvested plus acres of crop failure.

If the comparison is put on the basis of pasture land plus crop land, it changes considerably the figures for Kentucky with its large expanse of bluegrass pasture, and reduces the extremes of the difference for North Carolina. But it does not change the picture importantly. The simple fact is that the best methods the TVA or anybody else has developed cannot make farm incomes adequate on at least a third of the full-time farms in this country. They may keep the old folks on their present farms while they live; but their boys and girls will run out on them if we can have reasonably good urban employment in the next few decades. Their decadent farms will either revert to brush and timber or be absorbed in other farms. *The latter is frequently to be preferred; and this absorption should begin before all the young people have left for the city, while it is still possible to put together good combinations of land and farm operators.*



Those who propose making these small farms more productive need to consider still another aspect of the matter. Efficient intensive management of a 60-acre farm in southern Wisconsin, or in the Champlain Valley of Vermont, will yield as good a return as rough-and-ready extensive management of twice that acreage. The 60-acre farm will operate at a considerably higher fertility level than the 120-acre farm—it will have more operating capital invested currently per acre. If all dairy farms shifted to this intensive system, however, the market for dairy products would be glutted; as the shift in this direction developed in fluid milk areas, so much milk would be sold at Class 2 prices that the blended price would fall and the shift would be halted. The consequence of this is that some of the farmers operate at one level of intensity and some at another, and balance between them keeps the supply of milk at a level that equates with demand at prices that keep a certain quota of workers on the land.

In this way the farmers that have a predilection for a small acreage intensively farmed can satisfy their urge. Or whole counties may be saved by being brought within a milkshed around a growing city. But it is not possible, even where the farming lends itself to such intensification, to apply it to all the farms *until the demand for farm products increases markedly*. The problem of increasing the income of general farms in the TVA region, for example, cannot for this reason be solved by intensifying all the farming in this region. If part of them intensify, others must extensify. In the "surplus" condition likely to confront the agriculture of this country in 1948 and after, it will be particularly necessary for many of them to extensify.

Extensive farming, however, can still be good farming. It can be just as good farming as the intensive kind. It ordinarily means keeping more land in pasture and less in crops, more in hay and small grains and less in row crops. It may also mean keeping more beef cattle and hogs and fewer dairy cows and hens. Nearly all of these changes are good for the land. In the South, it will certainly mean growing less cotton and tobacco. To obtain an adequate income from these more extensive systems of management, more acres will be needed per farm.

The considerable shift toward more use of power and machines that is generally expected after the war is certain to have the same general effect as described. It will sometimes mean larger outputs

per farm, it is true, because the land will be more thoroughly worked in the technical sense. But the acreages will surely expand. If the mechanization of cotton growing and harvesting reduces man labor to a fourth or a fifth of present levels, as reported by Secretary Wickard in the recent hearings before the Pace Committee, it will force radical changes in due time on the cotton areas not lending themselves to it readily.

The farm-size pattern of the future will be still more varied than now. We shall see more part-time and residential farms. The family-sized farms will be generally mechanized and contain more acres than now. But some will use motorized equipment of the smaller sorts now being developed, to farm relatively small acreages intensively. Probably, also, we shall see more farms using highly-powered equipment on acreages larger than we will be inclined to call family-sized farms. The rate at which this size pattern will develop is mainly dependent on the levels of urban employment and of demand for farm products.

### *Submarginal Land*

The foregoing analysis raises the question as to whether there is such a thing as "unproductive" land. It is hard to find an acre of land that does not yield some kind of a product. But does it yield a *net* product? you may ask. The answer is "Yes," providing it is properly used. If net losses result, the land is nearly always being misused.

Is there, then, such a thing as *submarginal* land? that is, land that does not pay back what is put into it? The answer again is "No," in all but very exceptional cases.<sup>7</sup> But there is much *submarginal use* of land. Jasper county land would prove to be submarginally used if one insisted on growing mostly corn and winter wheat on it; or on farming so few acres of it that the net income per acre multiplied by the number of acres failed to provide a decent livelihood. But Douglas county land could be submarginally used too.

As the store of natural fertility in a soil diminishes, or structure

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<sup>7</sup> The very exceptional cases are lands like those in the Mohave Desert, or in the Great Salt Lake Desert, that must have highways and railways built across them because they stand in the way. No doubt, also, the expense of building highways and railways across some mountains is not fully offset by the several contributions of these to society, including scenic and recreational values, game, timber, and often most important of all, as collectors and reservoirs of water and snow for water-powers, irrigation and stream-flow generally. Some lands that would be submarginal in private use are not so in public use.

or drainage become poorer, or rainfall declines, or growing season shortens, the amount of product that will come forth from an acre of land declines. The inputs of labor and capital need to be proportioned to these other inputs. So long as the proportioning is properly done, no net losses result, and nothing is submarginal. These relationships are clearly seen as one crosses the country from the Mississippi River westward, with rainfall declining from 35 inches to 5 or less in a few almost desert sections. At the eastern end of this range, systems of farming can be practised that keep a large percentage of the land in cultivated crops. As the rainfall declines, wheat replaces the corn increasingly. Then come areas in which persistence in wheat growing will make the farming appear to be sub-marginal, and finally areas in which not even cattle and sheep raising can survive and hunting is the only possible form of land use.

Ordinarily no sharp break appears between two different uses of land. Farming in which corn is more important than wheat in eastern Nebraska gradually changes into farming in which wheat is more important than corn. Similarly, farther west, wheat farming gradually changes to ranching. Intensity of land use thus appears as a continuum rather than as a series of discrete steps.<sup>8</sup>

It is therefore entirely proper to speak of land as having a low productivity, per acre, or per man unit. Land can even be spoken of as in different *grades* according to its level of productivity. But little if any land in this country is completely unproductive. The most nearly unproductive land the writer found in forty thousand miles of automobile travel in 1941 was still supporting a few jackrabbits and might even have supported cattle if the jackrabbits could all have been killed off.

In this connection, the terms *intensive margin* and *extensive margin* are often used in such a way as to create confusion. Really these are not two margins, but two ways of looking at the same margin. When the approach is from the standpoint of the last unit of input that just pays for itself on a given type of land, we speak of the intensive margin. In the east-to-west continuum with declining rainfall, there is always a grade of land just a little lower that will

<sup>8</sup> Sharp breaks sometimes occur due to major changes in soil types. Such a break occurs as one passes out of the Podzol timber soils of northwest Minnesota into the Chernozem soils of the Red River Valley; or into the Sandhill grazing area of north central Nebraska; or from a hill slope to alluvial bottom land even on a single farm.

not use quite so much labor and capital without incurring a net loss. At the exact point where this begins, is the extensive margin when using *this amount of labor and capital*. Or given this particular piece of land, there is always a slightly larger input of labor and capital which will not quite pay for itself. At the exact point where this begins, is the intensive margin for this particular land.

Submarginality in *use* of land is not easy to determine for family farming types of agriculture, for it is not easy to say when the last unit of family and proprietor labor and management has just paid for itself. About the only basis upon which a value can be set upon such labor and management is according to the alternative-use value or opportunity-cost principle, and such values are difficult to establish. According to one application of this principle, the alternative-use value is what the farmer could earn at some other employment that is really open to him and that he would choose if he knew about it and was free to shift to it. In practice, however, the families living in low-income areas are often not free to change to other occupations, or they can do so only at great sacrifice. Hence they may not have any other real alternatives. This application of the principle of opportunity cost may therefore leave us with very little really sub-marginal *land use*.

A more constructive application of the principle, particularly in land-use planning, is to look ahead and see what alternative employments the next generation coming along in the area might seek and prepare itself for, and how the prospective incomes compare with those possible from farming in the area under various systems of farm organization. If the principle could be applied in this way, many of the present uses of land in the United States would prove to be submarginal, even after full allowance was made for the advantages of obtaining part of one's living from the farm directly, and after weighing all the advantages and disadvantages that go with living on farms as compared with living in cities.

Still another way of testing for sub-marginality may safeguard us from the error of consigning certain low-income areas to perdition. Perhaps the best way to explain it is to refer to the familiar boner of the restaurant operator who said he lost a little money on each meal he served, but made up for it by serving a large number of meals. If any farmer on any piece of land can increase his net income by farming more of it, he must have some margin of net revenue on what he is now farming.

When in 1933 and afterward, L. C. Gray, H. R. Tolley and others were trying to develop a land program for this country, they carefully refrained from designating any areas as submarginal. Instead, they talked about "problem areas." They assumed that every piece of land has a best use, and conceived their task as finding out what this use was. More often than not, it was some other agricultural way of using the land. In other cases, it was a combination of crops and grazing, or of crops and forestry, etc. They were looking for readjustments that needed to be made and not for opportunities to "abandon" land.

### *Quality in Land*

Let us now go back to the statement earlier in the article that the tendency is to grade land as poor to excellent solely on the basis of the supply of chemical plant nutrients contained in it. The soils professors have been telling us for twenty-five years or more that soils are much more than their chemical contents. But the minds of some of them still seem to run at times in the old grooves set by Justus Von Liebig. Modern soil science, while denying none of the facts established by Liebig, teaches that the balance-sheet theory of soil fertility is not even approximately true.<sup>9</sup> Apparently it is one thing to teach the newer soil science in the classroom and something very different to apply it in the analysis of practical problems. Once a particular soils situation confronts a working soil chemist, his mind still tends to slip back into the grooves established in the minds of an older generation.

This is not surprising. There is the same cultural lag in economics—the same gap between modern economic science and current practice. It is getting on toward a full century since the Austrian economists introduced the approach to value from the want side as distinguished from cost side, but a large fraction of the working economists when confronted by an actual problem find themselves thinking in terms of the concepts of Ricardo and John Stuart Mill. Only recently has the United States Supreme Court showed signs of breaking away from Mill's system of thought in the application of the theory of value to public utility rates. Dr. J. R. Commons in his *Legal Foundations of Capitalism*, which is a study of public valuation by the courts, almost accepts Mill's value theory as a valid

<sup>9</sup> For a non-technical discussion of the old and new theories, see Kellogg, Charles E., *The Soils That Support Us*. Macmillan, 1941. See especially pages 6-14 and 225-228 regarding the balance sheet theory.

basis for a legal theory of value, and some of Dr. Common's disciples are still saying that Ricardo and Mill were mostly right after all.

Which soil is the more productive, a black *Prairie* soil which yields 45 bushels of corn per acre with only small applications of fertilizer per acre, larger ones not seeming to help any, or a *Gray Brown Podzolic* soil that yields 70 bushels with large applications of fertilizer? The *capacity* of the soil to convert fertilizer supplements into product may be as important as the natural supplies of plant nutrients. The capacity of soils to use fertilizer productively depends upon texture, drainage, climate and other factors. The famous Caribou silt loams of Aroostook County, Maine, will produce 100 bushels of potatoes per acre for a short span of years with no commercial fertilizer; but with just the right amount of liming, clover plowed under to produce humus, and an application of one ton of 5-8-7 fertilizer, costing \$50, they will yield 375 bushels of potatoes per acre, of which 90 percent will grade U. S. No. 1.

The soils of Seabrooke farms of New Jersey, being managed by Dr. Frank App, furnish an even more striking illustration. In discussing these soils before the International Management Congress in 1938, Dr. App spoke of them as being light sandy loams, almost pine barren soils, in fact; and yet he argued that they might be able to out-compete much of the truck land of the southern states in the production of canning crops. The late Dean Lipman of New Jersey, who was present at this session, said that New Jersey had at least two million acres of land that was as well suited to growing these canning crops as that on Seabrooke farms. Location with respect to markets is a factor in the success of Seabrooke farms, but more important is texture, drainage, climate, rainfall, and of course skilled management.

The exemplification of the principle which probably is most important in the national economy is furnished by the Norfolk fine sandy loam of the Southeast Coastal Plain. Although this soil is low in plant nutrients under natural conditions, it is extremely responsive to management. In consequence, it is one of the best soils of the nation from an overall agricultural standpoint. Its low natural supply of nutrients is of little significance. Much more important is its adequate rainfall, sunshine, and long growing season, and the fact that it is very easy to maintain a good structure in its surface horizons for nearly all plants. Water enters the soil easily,

and while the lower soil holds a good supply between rains, it allows the excess to drain away. With the use of lime and fertilizers, and manures, green manures and cover crops to maintain organic matter, large yields of many crops are obtained at relatively low cost because the soil is so easy to handle. One might compare this soil with the Iredell soils in the same region. These have a higher content of plant nutrients under natural conditions, but they have a poor structure and are exceedingly difficult to manage even on gentle slopes. Chemical analyses could certainly mislead as to the relative value of these two soils for use by farmers.

As an example of the same thing under western conditions may be cited the soils in western North Dakota where the local soil types vary a good deal in their productivity for wheat under current practices. Nutrient supply has little relevance here also, the important factors being the soil characteristics which influence the entrance of water into the soil, its retention, and its delivery to plants when they need it.

It follows that the productivity of soils cannot be predicted from one or even two variables, even if one of these is plant nutrients in the soil. Soils vary so much from one another in all their characteristics that these must be considered *as a whole* in each case. The relation of nutrient content, of pH, of slope, of texture, of structure, or of any other characteristic, to yield and to response to management *depends upon the other factors in the combination*. The relationship between content of plant nutrients and yield, like that between slope and erosion hazard, between texture and workability, and between texture and water-holding capacity, or any other set of variables, is only *net* after the other variables are held constant. And of course it is extremely difficult to do this statistically. Given two otherwise *similar* combinations of soil characteristics, the influence of variations in plant nutrients, and so on can be determined. But such setups are mostly found only under the artificial conditions created on fertilizer plots.

Another difficulty is that most of the chemical data used by agronomists and soil chemists concern simply the surface soil. Whether or not a soil will respond to lime depends upon a lot of things besides the pH of the surface soil.

The most egregious instance of the type of error warned against in the foregoing is the recent attempt of a group of soil chemists and agronomists to determine the economic significance of the contribu-

tion of commercial plant nutrients to agricultural production. This group has discovered that commercial fertilizer is responsible for 20 percent of the agricultural product of Ohio, Indiana and California, 25 percent of that of all New England, 65 percent of that of Rhode Island, 60 percent of that of North and South Carolina and New Jersey, and 83 percent of that of Florida. The 65 percent, for example, for Rhode Island means only 35 percent for all the labor and management of the farms of the state, all the investment in buildings, machinery and livestock, and all the seed and other supplies, including a *purchased feed bill which is nine times larger than the fertilizer bill*. Dr. Charles J. Brand, Executive Secretary of the National Fertilizer Association, in attempting to defend these results, has remarked as follows: "I believe most informed people, for example, in Florida, would say that on most of their soils practically no *marketable* fruits or vegetables could be produced without fertilizer. Our estimate for Florida was 83 percent dependence on fertilizers."

Would it seem a bit unreasonable to suggest to Dr. Brand that he mix up a batch of nitrate, phosphate and potash, add whatever lime and magnesium he wishes, and traces of iron, copper, etc., stir it up with just the right amount of water and spread it out as a thick layer on the prairies of North Dakota, and plant orange trees and see what yield he gets. Dr. Brand might well reply: "But North Dakota doesn't have the climate and rainfall for oranges." True, neither has it the particular structure, texture, etc., of soils that go with Florida climate and rainfall. It is the particular *combination* of all these factors and some others that makes orange growing successful in Florida, and establishes the value of the land on which oranges are grown. This particular combination is not repeated *ad libitum* in the world, any more than the particular combination that has made Chicago the second city in the United States.

When the Soil Survey began some twelve years ago to make ratings of soil types in order to express their productivity for crops, an attempt was made to express *inherent* productivity. This was supposed to represent the yield of crops from the soil with the natural supply of plant nutrients when the soil had passed through a very short early period of unusual tilth before the natural supply of plant nutrients and organic matter was exhausted. It also made a rating under *current practice*, which was defined in each case as



well as possible in physical terms according to the management practices followed by the majority of successful farmers, which was generally better than average but well below the best.<sup>10</sup> The Soil Survey has since found the concept of *inherent* productivity difficult if not impossible to apply, and seems to be abandoning it largely. The Soil Survey now gives productivity ratings for soil types under stated management practices.<sup>11</sup> In fact, it insists that "soil productivity is a matter of response to management and must be measured in yields and quality only under a specified management."<sup>12</sup> Thus a soil like the Norfolk fine sandy loam, mentioned earlier, would receive a very low rating under a system of management that did not include lime, fertilizers, manure, or green manures, but a high rating under a system that did include these practices.

The recent releases of the Soil Survey give productivity ratings for soil types under several physically defined systems of management wherever adequate data can be assembled. The translation of these ratings into economic terms must take account of predicted costs, prices, land values, and so on. Some of the ratings are given in terms of percentage of a standard, and some directly in terms of bushels. Of course, either can be calculated from the other. In using them in farm planning, one needs to know the yields, but in making comparisons between soils growing different crops, the ratings in percentage are useful. General ratings made by weighting those for the individual crops, are not entirely satisfactory.

It is thus apparent that much confusion can be introduced by thinking of the productivity of soils in terms largely confined to the chemical nutrients they contain, or which are added through commercial fertilizers. When to this confusion is added that arising from measuring productivity generally per acre rather than per man, we are in danger of going astray in working out plans for land use.

### *Intensity of Use*

Several of the soils named would be rated low in any scoring system based on chemical contents of the soil. They might even be rated *poor* in the popular classification of soils as excellent, good,

<sup>10</sup> *Soils and Men*, pp. 1011-15.

<sup>11</sup> See Ableiter, J. K., "Productivity ratings of soil types," pp. 13-24 in *The classification of land*, Bull. 421. Missouri Agr. Expt. Sta., 1940.

<sup>12</sup> Kellogg, Charles E., *The Soils That Support Us*, p. 261.

fair and poor. Yet both of them are used with a high degree of intensity.

This leads to the remark that earlier analysis in this article may have carried the implication that the adjustments needed on low-grade soils are generally toward less intensity. This was not intended. Often, less labor intensity is required, but this is made up for by more capital intensity. The total product resulting may be either more or less. If grazing is substituted for crops, the product is less; likewise if small grain is substituted for row crops or cotton. When, however, pastures are improved by the application of lime and phosphate, or by restocking with better grasses and legumes, or by contour ridging, the output is increased. Likewise is it increased when more fertilizer is applied or the land is given better tilth.

The kind of land improvement that much land not now submarginally used requires is pretty certain to result in larger yields. No doubt the reason for the present low incomes in many areas is that the land has not been improved enough. Just as arid land becomes highly productive when water is applied to it, so may other types of land when certain essential elements are provided.

Probably most of the forest land of the country now submarginally used—at least, private enterprise is not willing to take it over—is in this state because it is not being intensively enough managed.

This is illustrated—but of course not proved—by an analysis of woodland management in Worcester County, Massachusetts. One of the forest farms analyzed may serve as an example. It consists of 350 acres of land mostly in some kind of tree or brush covering. Incomes were estimated for it by five-year periods up to eighty years for two scales of farming operation and five different intensities of forest management. One scale of farming operation involved keeping four milk cows and providing pasture, hay and forage for these and for the three horses used on the farm and woodland work, as well as other food for the farm family. The other involved producing food only for the farm family (one cow, etc.) and hay for the horses. The combination which promised the largest returns over the whole period included the four cows, "full" treatment on 14 of the stands, and "partial" treatment on 10 of them. The full treatment involves doing all the thinning and improvement cutting required for good silviculture at any period, and handling the cutting in such a way as to come out in the end with all age classes

represented by even-aged stands. The partial treatment calls for one weeding when any stand is about 15 years old, a combined thinning and improvement-cutting operation at around 30 to 40 years, a thinning around 55 to 65 years, and a final cutting around 80 years. Full treatment did not promise to pay out on the 10 poorer sites. On the other hand, applying only partial treatment to the 14 better stands would reduce the net income greatly and leave the operator with some spare time. *With either no treatment at all, or with a cordwood system of cropping, this forest-farm would not be able to support the operator and his family.* The combination with the four cows promised to pay better than that with only one, because, first, some of the land on this holding grows good pasture, hay and other forage, and returns considerably more per acre so used than in timber, and second, the operator can fit in the labor needed for this much farming without its interfering with his work in the woods.

### *Application by Areas*

The meaning of the foregoing analysis varies greatly for different sections of the country. The Jasper county situation is only one among many hundreds in the country, each with its own particular complexion. Consider, for example, the Mississippi Delta territory. The ordinary cropper on these inherently high-productive lands has a very small income. Subtract from his gross sales his out-of-pocket costs for seed, mule feed, ginning, sprays and the like, and divide the net proceeds by the number of hours of labor which he and his family spends in growing and picking the cotton, and the quotient, in the years preceding the war, was around ten to fifteen cents per hour. The Delta cropper spent an average of 150 hours per acre of cotton in those years. We are now being told that with full mechanization, including the use of mechanical cotton pickers, the labor input can be reduced to 30 hours per acre. This will make it possible for one worker to handle five times as many acres as before. Other crops that can be combined with cotton can also be mechanized. Although this land is obviously not poor, those who grew the prewar cotton had submarginal incomes.

Incomes were of course even lower on comparable farms in the Piedmont areas of the South. Cotton is likely to be much more difficult to mechanize in these areas because the fields are small and irregular. Furthermore, the Piedmont soils require heavy applica-

tions of commercial fertilizer. A system of land use seems to be called for that is in the nature of general farming, the mainstay of which is forage production for livestock, with cotton as a supplementary cash enterprise. Unless something of this kind takes place, all of the small farmers depending upon cotton in the Piedmont areas will be forced out in due time. The uses of the land will be much more submarginal than they are now. General farming, however, should be able to persist in competition with general farming in other regions.

Merely shifting to *general* farming is not enough. In the *general farming* parts of Tennessee, farm incomes are only a little better than in the Piedmont cotton sections. There is not enough productivity within the usual farm boundary.

The Rendzina soils of the Black Belt of Alabama and Mississippi present another type of situation. The black topsoil layer overlying the lime, not very thick in the first place on much of it, has been worn so thin by two centuries of continuous cropping that cotton can no longer be grown successfully. Also the cotton matures late on these soils and perhaps suffers more from the boll weevil than cotton on warmer soils. The plants also suffer a little more from drought in periods of combined drought and heat. The land lends itself to large-scale mechanical treatment, but more than this is required. Types of soil management must be developed that will gradually restore the humus in these soils. The Alabama Experiment Station seems to be making good progress in devising systems of management including hay and pasture to be fed to cattle.

The northern cut-over lands of the Great Lakes states are commonly rated as mostly poor and unproductive. As a matter of fact, they include a good many stretches now in poor timber that would make good crop land. Enough good plow land is intermingled with the rough stony and sandy land so that much of it can be organized into successful operating units combining crop growing with dairying and forestry. In some areas, these units would derive their income more largely from dairy production and such crops as potatoes. In others, the timber would provide the major source of income. The units need to be larger, however, than most of those now found in the region, to make more use of power and machinery, and especially to develop less labor-consuming types of silviculture.

The so-called abandoned lands of the Northeast offer still another example. Very little of this land is in fact abandoned. Almost al-

ways someone is willing to retain title to it and pay the taxes. The Great Lake states have much more abandoned or tax-delinquent land than has the Northeast. But it is true that farming has been given up on a large amount of land in the Northeast. It has gradually retreated down the mountain slopes toward the valleys until today none is left in many sections except in the valleys and "intervalles."

Professor F. F. Hill says that recent farm management surveys in New York show that the hill farms are still disappearing. This is likely to continue as long as present systems of land use continue. The usual operating unit on these hill lands provides only a sub-standard family living. But we need not conclude from this that no other future is possible for these areas. What a vigorous program of land-use adjustment would do for these areas has not been determined. Farm forestry and forest farming units will not develop without considerable public assistance of one form or another. Neither will the farmers now on these lands restore their pastures and meadows to full productivity without a good deal of help.

### *Measures*

We have heard much discussion in the last ten years of the need for readjustment of land use in the low-income areas, but very little has actually been accomplished. Instead, in New York state some public funds have been made available to buy up these lands and put them into state forests, and in Wisconsin a program has been developed for zoning such lands out of agricultural use. Probably most of the lands thus far purchased or zoned out will produce more in straight forest use than in any other way, but we can not be sure of this. For some of them, a combined agricultural and forest use might prove to be better if only we knew enough about this kind of farming. Probably as one step in this direction, each state should establish a number of "pilot farms" in which agriculture and forestry are combined into various patterns. Data on actual returns from different combinations will be delayed because of the period required to mature a crop of trees. But data on growth rates by species and sites enable one to make fairly accurate forecasts of volume of timber output. Prices will have to be more or less conjectural.

Few of the present undertakings along these lines measure up to

needs. The Norris-Doxey farms and woodlands are not carefully enough replanned in most cases to serve as real test demonstration units. Most of the test demonstration farms of the TVA are not replanned drastically enough to serve such a need. They were intended to serve a more limited purpose. Possibly the nearest approach to what is required are the several "unit farms" that have been organized by the Alabama Experiment Station. The writer visited one of these in the Black Belt in 1941. Professor Harry Woodworth's article contains the best discussion of the possibilities of such pilot farms.<sup>13</sup>

Doubtless, however, we will not be able to wait for the results of such testing before having to proceed in many problem areas. Instead, we shall have to make the best of what knowledge we now have, and learn by trial and error on a larger scale.

In order to make the adjustments required in many problem areas, many farmers will need credit to purchase the additional land needed or to improve some of their land, and to secure the necessary additions to their livestock and equipment. Loans for such purposes can be obtained from the Farm Credit Administration, but only within rather rigorous limits. Many of the mortgages now being written by the Federal Land Banks are for the purchase of additional land, but ordinarily these are not to obtain larger acreages in low-income areas. They are more likely, instead, to help some farmer already with a sizable holding to obtain enough more land so that he can use large-scale equipment more efficiently. Credit for younger families showing promise, with some guidance in planning the reorganizations such as the Bankhead-Jones borrowers now receive, should induce a good deal of improvement in most areas in twenty years.

The farms being set up under the Bankhead-Jones program of the Farm Security Administration are usually economic units meeting the conditions outlined in this article, but too few of these are available in the low-income areas to be of any particular help. Professor H. C. M. Case, however, insists that too often they have not been economic units on the claypan soils of Illinois.

The program that gets nearest to dealing with this problem is the land utilization program of the Soil Conservation Service, the pro-

<sup>13</sup> *Farm Management Research Needs in New England*, this JOURNAL, August 1944.

gram which the SCS inherited from the Resettlement Administration when it was reorganized. This is a program for buying run-down tracts of land, rehabilitating and reorganizing them into economic units, and then leasing them back into private ownership. Apparently, this program is conceived at present, like the Wisconsin and New York programs, mainly as a program for taking land out of regular farm use and getting it into special uses, such as timber, grazing or meadow. Where shift of land largely from one major use-class to another is needed—and situations of this sort are not hard to find—such procedures are indicated. But in the more usual situation in this country, the land needs to be handled in farm units, or farm-forestry or forest-farming units, and the intent should be resale rather than leasing, and as promptly as economic units can be established.

This program is very small at present, and keeping itself well under cover. So much opposition has been stirred up in recent years to public ownership of land that it is doubtful if it should be urged at present even as a step toward its reconversion or reorganization. Let the Soil Conservation Service now demonstrate what it can do with the tracts it has, and in particular that it can transfer some of them back into private ownership.

## THE MARGINAL FEED COST OF PORK AND LARD\*

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CHANGES in the number and in the marketing weight of hogs have held a high place in agricultural planning during the current war period. In 1941-42, interest centered in increasing both numbers and weights in order to convert the seemingly tremendous stocks of feed into meat and lard. By 1943-44 an impending feed shortage made imperative a reduction in numbers and weights, but the danger of a shortage was averted in 1944 when reduction in livestock coincided with a record feed crop.

Hogs consume more feed grains than any other class of livestock, and they are important sources for both meat and fat. The use of limited feed resources to secure the greatest food production requires that choices be made between hogs and other classes of livestock including poultry, and between fat hogs and alternative sources of fat.

To make these decisions wisely we should know the feed required to produce pork and lard and particularly the effect of shifts in marketing weight upon the relationship between feed consumption and pork and lard production. Since pork and lard are both obtained from hogs of all weights, it is impossible to figure the average feed costs of each separately; i.e., pork and lard are "joint products" in the sense that they are both produced together. They are not produced in fixed proportions, however, for by changes in marketing weight the proportion of pork to lard can be varied. This makes possible the determination of the relationship between feed consumption and pork production independent of changes in lard output and of the feed-lard relationship with pork output unaffected. These relationships, which may be called the marginal feed costs of pork and of lard, are critical ones to consider in deciding on any shift in marketing weight of hogs or any allocations of

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The writer is indebted to R. G. Bressler Jr. and C. H. W. Sedgewick of the University of Connecticut for help with the equations used. R. L. Mighell and J. W. Klein of the Bureau of Agricultural Economics made helpful suggestions.



feed between hogs and other livestock. The purpose of this paper is to develop these marginal feed costs under certain simplifying assumptions.

Three sets of basic data are used in the determination of the feed cost of pork and lard production.

- I. Feed-after-weaning is based on 12 experiments in the 5 Corn Belt States involving 800 hogs full-fed a balanced ration with corn as the basal feed in dry lot.<sup>1</sup>
- II. The feed and gain of the breeding herd is based on market statistics of the BAE and farm-cost studies, chiefly unpublished results, based on records of 10,000 sows.<sup>2</sup>
- III. The composition of the hog is based on a recent report of slaughter tests of 64 intermediate type hogs.<sup>3</sup>

The relationship between feed consumption and live weight gain is treated in detail in another report<sup>1</sup> which deals with the problem of the most profitable marketing weight for the farmer. The feed-gain figures are presented here only in summary form in connection with the composition of the hog to show the relationship between feed consumption and pork and lard output. It is necessary, however, to consider the composition of the hog in some detail.

### *Standardized Pork and Residual Fat*

The composition of the carcass offers a special problem in comparing hogs of different weights. Packers ordinarily obtain no higher percentage lard yields from heavy hogs than from light ones, even though the heavy hogs are much fatter. Some fat cuts, such as plates and backs, are usually rendered into lard in the case of light hogs because they are too thin to make acceptable cuts. Such cuts, which absorb a large portion of the added fat of the mature hog, are normally made into pork cuts in the case of heavy hogs, and thus increase the pork yield at the expense of the lard yield. Thus the pork from a heavy hog contains more fat and less

<sup>1</sup> Atkinson, L. Jay and John W. Klein. "Feed Consumption and Marketing Weight of Hogs." Manuscript submitted for publication as USDA bulletin.

<sup>2</sup> Steanson, Oscar. "The Economics of Corn Belt Hog Production." Unpublished manuscript, BAE.

<sup>3</sup> Ellis, N. R. 1943. "The Chemical Composition and Nutritive Value of the Dressed Carcass and Cuts in Relation to Live Weight of the Hog of Intermediate Type." A.H.D. No. 67, BAI, USDA mimeo.

Hankins, O. G. and Hiner, R. L. 1943. "The Physical Composition of the Dressed Carcass and Cuts in Relation to Live Weight of the Hog of Intermediate Type." BAI, USDA mimeo.

protein and is not comparable nutritionally with meat from lighter hogs. In order to make them more comparable, use is made here of the concept of "standardized" pork<sup>4</sup> which is pork of a given composition (chemical). It is obtained by trimming the fatter cuts that come from the heavier hogs more closely than the leaner cuts that come from the lighter hogs in order that the cuts be of approximately standard composition, regardless of the slaughter weight of the hog.<sup>5</sup>

On the basis of the chemical and physical composition the chemical content of pork cuts from hogs that weigh from 175 to 275 pounds can be approximately standardized by trimming the fat on each cut more or less closely, as needed.<sup>6</sup> The result is pork of a given composition from hogs of various weights, which is termed "standardized pork." The remaining fat trimmings are figured on the basis of their fat content, i.e., a rendered basis, and are called "residual fat, lard equivalent."

Standardized pork and residual fat are based upon the edible portion of the carcass; they differ from the dressed carcass by including edible offal but excluding bone and skin. The standardized pork and residual fat from a hog weighing 225 pounds will weigh about 80 percent as much as the dressed carcass. The 13 percent protein and 42 percent fat in the standardized pork are about the same as Chatfield and Adams' figures on the proximate composition of the edible portion of medium carcasses. In other words, 1 pound of standardized pork is equal to 1 pound of the edible meat (excluding skin and bone) from a medium carcass, and is equal to 1.1 pounds of meat as purchased at the store.<sup>7</sup>

While it is assumed that each cut is handled in a standard way, the validity of standardized pork as a measure of the nutritional value of pork and lard does not depend upon a carcass actually being cut in the prescribed manner. If e.g., clear plates are more valuable as a pork cut than if they are rendered into lard, the evaluation of the edible protein and edible fat in these cuts is valid even though it is not rendered. One result of this calculation is that the

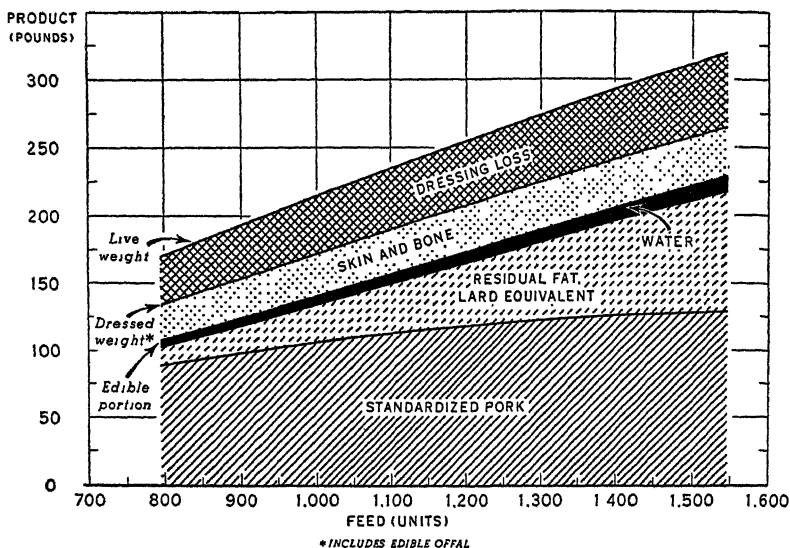
<sup>4</sup> Developed by John W. Klein, BAE, on military leave.

<sup>5</sup> This is possible (though not necessarily desirable) because the hog reaches what is known as chemical maturity at about 150-175 pounds at which weight the composition on a fat-free basis becomes stabilized. Ill. Agr. Expt. Sta. Bul. 323, p. 589.

<sup>6</sup> Based on the chemical and physical tests of composition by the BAI., op. cit.

<sup>7</sup> Except for a slight adjustment to include edible offal. "Proximate Composition of American Food Materials," USDA Circ. No. 549, 1940.

"residual fat, lard equivalent" overstates the visible fat production; but since fat cuts are used in part for the same purposes (e.g. seasoning) as visible fat, the failure to qualify as a visible fat may not be serious so far as the fat supply is concerned. This failure appears as a problem only in the artificial classification of fats which includes only the visible supply. From a nutritional standpoint, plates and backs are of about the same value as pork cuts or



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FIG. 1. OUTPUT AS RELATED TO INPUT, PER HOG BASIS

As the marketing weight increases, dressed weight rises relative to live weight, and the edible portion of the carcass increases more than the inedible (skin and bone). Thus, the largest output of live weight per feed unit is at about 175 pounds, the peak output of dressed carcass per feed unit is at 250 pounds, while the total output of edible product rises at a more rapid rate than total feed consumption throughout the range of the data.

as lard and cracklings, except for any difference in waste. Similarly standardized pork and residual fat are nutritionally valid for measuring the other cuts from hogs of various weights even though this method of cutting is not followed.<sup>8</sup>

In comparing hogs of different weights complete standardization is assumed, even though only an approximation is feasible in prac-

<sup>8</sup> It will not, of course, reflect consumers' preferences for particular size cuts.

tice. Care is taken that the edible fat and edible protein are accurately reflected in the extensive use of the concept of standardized pork that is made here. The use of this concept is based on the belief that this is the most appropriate measure available for comparing hogs of different weights.

### *Input-Output—General Relationships*

As the marketing weight of the hog increases, standardized pork increases at a less rapid rate (than weight) while residual fat increases more rapidly (fig. 1). The water shown in figure 1 is that obtained when rendering the fat. The skin and bone make up the rest of the dressed carcass. The dressing loss then, is the difference between carcass and live weight.<sup>9</sup>

As hogs are fed to heavier weights, the relationship between feed<sup>10</sup> and output measured in various ways is as follows:

- (1) Live weight increases but at a slowly declining rate above 175 pounds weight of the butcher hog.
- (2) Dressed carcass including edible offal increases at a more rapid rate than feed until a weight of about 250 pounds is reached, and thereafter at a less rapid rate.
- (3) The edible portion of the hog increases at a more rapid rate than feed throughout the range shown. As the weight of the hog increases an increasing percentage of the edible portion consists of residual fat, while standardized pork makes up a smaller percentage although it continues to increase in absolute terms.

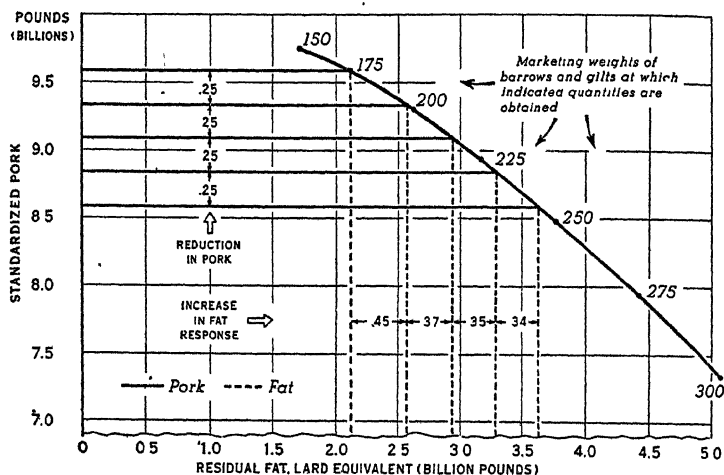
### *Alternative Outputs of Pork and Fat from a Fixed Feed Supply*

An approach to the marginal feed cost of the production of pork and fat may be made by ascertaining the shifts in each that can be made from any given feed supply for a given period of time about a year in the future, by changing both marketing weight and farrowings. Figure 2 is based on 88 billion feed units, which is about the

<sup>9</sup> The breeding herd live weight is 20.3 pounds per pig marketed. Thus, the top line in fig. 1 shows the average live weight for all hogs. If 20.3 pounds are subtracted the result is the live weight of the butcher hog, which is the marketing weight that is referred to in this paper. The breeding herd consumes 290 feed units per pig marketed. In all input-output comparisons both the feed and the gain of the breeding herd are included.

<sup>10</sup> Feed is measured in feed units, using Jennings' values, USDA Circ. 670, 1943. A feed unit is equal to a pound of corn. One pound of tankage equals 2.5 feed units and one pound of soybean meal equals 1.75 feed units.

average annual feed consumption of hogs, 1940-42. Production of pork is shown on the vertical axis and production of fat, lard basis, on the horizontal axis. The curve shows the variations in each that are obtained by shifting the marketing weights.<sup>11</sup> The weights are indicated but the number of pigs is not shown. At the upper left section of the curve where pork production is largest and the fat



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FIG. 2. ALTERNATIVE QUANTITIES OF STANDARDIZED PORK AND RESIDUAL FAT THAT CAN BE OBTAINED FROM 88 BILLION FEED UNITS

A given quantity of feed may be fed to a relatively large number of hogs marketed at light weights or to a smaller number of hogs marketed at heavier weights. As the marketing weight is increased, production of standardized pork is reduced and of residual fat is expanded. Beginning with hogs marketed at 175 pounds, increasing weights (and decreasing numbers) just sufficient to reduce pork by .25 billion pounds permits an increase in residual fat of .45 billion pounds. A second increase in weight that results in another reduction of .25 billion pounds of pork increases residual fat production only .37 billion pounds. Further increases in weight that result in equal reductions in pork bring about successively smaller increases in fat—.35 billion pounds for the third step and .34 billion pounds for the fourth.

<sup>11</sup> This curve (fig. 2) is one variety of an indifference curve which was employed by Edgeworth and recently developed by Hicks and Allen. The application here, which may be called a production indifference curve, is similar to the terms of trade application by Haberler.

Edgeworth, F. Y. *Mathematical Psychics*. London School of Economics and Political Science, 1932 Series of Reprints of Scarce Tracts in Economics and Political Science, No. 10, pp. 21-22.

Hicks, J. R. and Allen, R. G. D. "A Reconsideration of the Theory of Value." *Economica* 1934.

Haberler, G. "The Theory of International Trade." Macmillan (1936) pp. 186 ff.

yield is least, weights are low and hog numbers are high. Moving along the curve to the right and downward, pork declines and fat increases. Numbers gradually decrease and weights increase. The curve not only shows that fat production can be increased at the expense of pork for a given input of feed by increasing the weights and decreasing the farrowings, but it also shows the amount by which pork must be reduced to get increases in fat; this may be termed the pork cost of fat.

To determine the pork cost of fat, the standardized pork production from light weight hogs, say 175 pounds, is read off the chart as the base; then by successive steps the standardized pork production is reduced and the change in fat yield that can be obtained is observed. If hogs are marketed at about 175 pounds, 9.58 billion pounds of pork and 2.15 billion pounds of fat are produced. The procedure followed will be to see the effect on fat production of equal successive reductions in pork production. This will be accomplished by reducing hog numbers and increasing marketing weights.

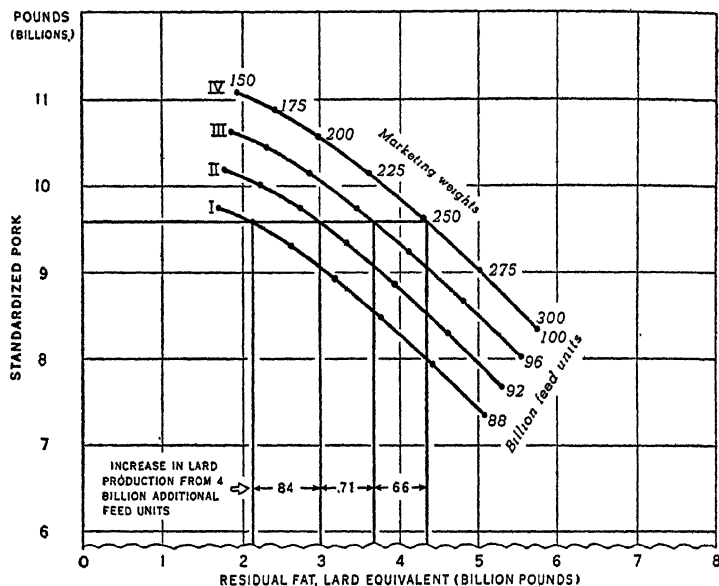
If pork production is reduced 250 million pounds, fat can be expanded by 450 million pounds. Thus a pound of fat can be obtained by a reduction of 0.56 pounds of pork in this marketing range. Marketing weights are increased almost 25 pounds by this shift to 200 pounds. If pork production is reduced another 250 million pounds, fat can be increased by another 370 million pounds.

From the chart it can be seen that each successive equal reduction in pork makes possible smaller expansions of fat. There is an increase of 350 million pounds of fat for the third pork reduction of 250 million pounds, and 340 million pounds for the fourth, and so on. As hogs increase in marketing weight, the amount of fat that can be obtained from a given reduction in pork decreases. To put it differently, the pork cost of fat increases with each increase in marketing weight.

Retracing the steps taken on the chart, if standardized pork is increased by 250 million pounds, each successive increase in pork is accompanied by a larger reduction in fat. Thus, a given increase in pork production requires a greater reduction in fat yield in the case of light weight hogs than in the case of the heavier hogs. The marginal cost of pork, then, in terms of fat, decreases with increase in marketing weights.

These results are preliminary to the determination of the mar-

ginal feed costs of pork and fat for hogs marketed at various weights, which is the next step. Feed is assumed to be fixed in these calculations, but this does not limit the results. It merely simplifies the analysis. When the possibilities of a given quantity of feed are explored, it is a simple step to calculate the effect of changes in the feed supply.



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FIG. 3. MARGINAL FEED COST OF INCREASES IN TOTAL LARD EQUIVALENT PRODUCTION FOR THREE INCREASES IN MARKETING WEIGHT USING EQUAL CHANGES IN FEED CONSUMPTION

As marketing weight is increased, the marginal feed cost of lard rises. For the increase in weight from 175 to 210 pounds, 4 billion additional feed units increase lard by .84 billion pounds or at a marginal cost of 4.76 feed units per pound of lard. For the 2nd increase in marketing weight, the marginal cost is 4 billion divided by .71 or 5.63 feed units. For the 3rd increase in marketing weight, the marginal cost of lard rises to 6.06 feed units.

### *Independent Shifts in Standardized Pork and in Residual Fat; Varying Feed Supply*

The possibility of simultaneous shifts in number of pigs farrowed and in marketing weights permits the use of the treatment of input-output measurement and marginal cost determination for "joint

products" that was developed by Marshall.<sup>12</sup> Pork and fat are joint products whose proportions can be—and are in practice—varied within rather wide limits. In the preceding section, increases in fat at the expense of pork were illustrated for a given feed supply. If changes in feed are introduced, either standardized pork or residual fat may be maintained at any given level while the other (pork or fat) varies.

Figure 3 is similar to figure 2 except that instead of a curve for one quantity of feed, four curves for four quantities of feed are shown. As before each of the heavy lines shows alternative combinations of pork and fat that can be produced for each of the feed quantities. To figure the marginal feed cost of fat, it is necessary to hold pork production constant. Then the fat production can be increased and the increase in feed that is needed to obtain a unit increase in fat is the feed cost of this unit of fat. In figure 3 this is shown by beginning with production of 9.58 billion pounds of standardized pork and 2.15 billion pounds of (residual) fat obtained from 88 billion feed units fed to 96.8 million hogs marketed at 175 pounds. Moving horizontally from Curve I to Curve II (instead of along Curve I as was done in figure 2) pork production is unchanged while fat yield is increased from 2.15 to 2.99 billion pounds or an increase of .84 billion pounds by an increase in feed of 4 billion units which is the difference between each of the feed curves, by construction. The marginal cost of this increased fat then is 4 billion feed units divided by .84 billion pounds of fat, or 4.76 feed units. This same procedure can be repeated by moving horizontally from Curve II to Curve III, and then from Curve III to Curve IV. While pork production is unchanged, fat production increases from 2.99 to 3.70 and then to 4.36 billion pounds. Each move is toward a higher marketing weight for hogs. Note that the equal increases in feed bring smaller increases in fat as the weight of hogs increases. Thus the marginal feed cost of fat *increases* with each *increase* in marketing weight.

Curves similar to those in the previous figure are repeated in figure 4 to show the marginal cost of standardized pork. The principal difference is that to get appropriate changes in pork production it is necessary to increase feed more than for residual fat. Beginning with a marketing weight of 225 pounds, three equal in-

<sup>12</sup> Marshall, A. "Principles of Economics," 8th edition, p. 390. Appendix Mathematical Note XIX, p. 854.



creases of feed are shown. If marketing weights are reduced and the number of hogs marketed is increased so that fat production remains unchanged, as shown in figure 4, the successive increases in pork for each 20 billion feed unit increase are 2.54, 2.46, and 2.40 billion pounds. Thus with decreases in marketing weights, the marginal feed cost of pork increases, although very gradually.

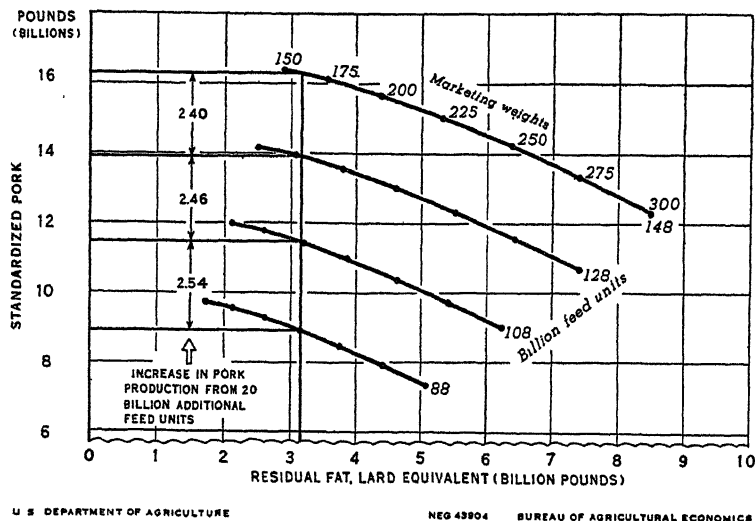


FIG. 4. MARGINAL FEED COST OF INCREASES IN TOTAL STANDARDIZED PORK PRODUCTION FOR THREE DECREASES IN MARKETING WEIGHT USING EQUAL CHANGES IN FEED CONSUMPTION

As marketing weight is reduced the marginal feed cost of pork increases. The reduction in marketing weight from 225 to 200 pounds increases pork production 2.54 billion pounds at a marginal feed cost of 7.87. For a 2nd reduction in marketing weight, 2.46 billion pounds of pork are produced and for a 3rd, 2.40 billion pounds, with marginal feed costs of 8.13 and 8.83 respectively.

Using the principle employed in figures 3 and 4, the marginal feed cost of standardized pork and of residual lard<sup>13</sup> can be determined mathematically for the marketing range for which the data are available. The three variables—standardized pork ( $p$ ), residual lard ( $l$ ), and feed ( $f$ )—were obtained as functions of live weight ( $w$ ) of the hog. The functions used may be approximated by the following cubic parabolas:

<sup>13</sup> In this section the word *lard* is used instead of *fat* in order to avoid confusing fat and feed in the symbols of the equations.

$$p = 116.693 + 7.1085w - 0.91317w^2 - 0.030333w^3 \quad (1)$$

$$l = 41.347 + 12.0752w + 1.21087w^2 + 0.020361w^3 \quad (2)$$

$$f = 1149.788 + 124.2182w + 2.29460w^2 + 0.119722w^3 \quad (3)$$

In these equations  $p$ ,  $l$ , and  $f$ , represent the "per hog" quantities of pork, lard, and feed;  $w$  represents market weight, coded by units of 25 pounds and expressed with 225 pounds as origin.

From these "per hog" relationships, it is possible to obtain equations showing the marginal feed cost of pork and of lard under conditions in which both the number of hogs farrowed and the market weight are variable. The final results are as follows:

$$\frac{dF}{dL} = \frac{6322.2 + 2635.4w + 276.28w^2 + 9.2379w^3 - 0.0397w^4}{1115.2 + 358.11w + 30.524w^2 + 1.0221w^3 + 0.0181w^4} \quad (4)$$

$$\frac{dF}{dP} = \frac{8747.8 + 2594.7w + 178.09w^2 + 2.1671w^3 - 0.0983w^4}{1115.2 + 358.11w + 30.524w^2 + 1.0221w^3 + 0.0181w^4} \quad (5)$$

In these equations  $F$ ,  $L$ , and  $P$  represent total feed units, total pounds of residual lard and total pounds of standardized pork, while  $w$  represents market weight, coded as above. Thus  $dF/dL$  represents the marginal feed cost of lard, and  $dF/dP$  the same for pork. The final answers are shown at 25 pound intervals for the market range for which the data apply (table 1).

TABLE 1. MARGINAL FEED COSTS FOR STANDARDIZED PORK AND FOR RESIDUAL FAT<sup>1</sup>

Market weight of butcher hog	Marginal feed cost of residual fat	Marginal feed cost of standardized pork
<i>Pounds</i>	<i>Feed units</i>	<i>Feed units</i>
175	4.06	8.29
200	5.03	8.05
225	5.67	7.84
250	6.14	7.66
275	6.51	7.47

<sup>1</sup> Based on equations (4) and (5) above. For example at 225 pounds, all the terms of the equation are zero except the first.

$$\frac{dF}{dL} = \frac{6322.2}{1115.2} = 5.67$$

With each increase in marketing weight, the marginal feed cost of residual fat rises within the limits of the data. In other words, the feed required per pound of fat, making corrections for changes

in standardized pork, *increases directly* with slaughter weight.<sup>14</sup> The feed required (marginal feed cost) per additional pound of standardized pork, however, with correction for residual fat, *decreases* with each *increase* in marketing weight.

It does not follow, however, that if more pork is wanted, hogs should be fed to heavy weights and vice versa. If more standardized pork is desired rather than more fat, the change can be accomplished only by reducing weights and increasing the number of hogs marketed.

It does mean, however, that the reduction in marketing weight will have the effect of increasing the feed cost of the additional pork. Similarly, if residual fat is to be expanded, relative to standardized pork, marketing weights must be increased, and the effect of the shift in weight will be to increase the feed cost of the additional fat.

The trend of marginal costs as reported above is not what the writer had expected nor what is apparently the general "informed opinion." It was expected that the marginal feed cost of pork would rise as the slaughter weight of hogs increased and that the marginal feed cost of fat would decline, but these relationships were found to be just the opposite, as has been explained. The results obtained, however, have not been found to be at variance with any general economic principles. In fact there is some evidence that the results obtained are more reasonable<sup>15</sup> than those expected before the analysis was made, but the evidence is not definitive.

#### *Use of the Marginal Feed Costs in Agricultural Policy*

During the war, the United States Department of Agriculture in cooperation with the Land Grant Colleges has been setting goals for the number of pigs to be farrowed and for the weight at which they should be marketed. The present law that provides support for agricultural prices for two years after the war means that planning of production will not end with the war. Peacetime aims will differ from wartime aims, but it will still be necessary to choose between more hogs at lighter weights and fewer hogs at heavier weights as well as between the different classes of livestock. The

<sup>14</sup> It should be remembered that packers do not normally obtain higher percentage lard yields from heavier hogs than from lighter ones; thus the residual lard is not the same as visible fat, for a large part of it is usually marketed as "pork" cuts, e.g. backs, plates, etc.

<sup>15</sup> That is, fit in better with the general theory of marginal costs for joint products.

marginal feed costs of pork and of fat form a part of the essential data needed to make these choices in such a way that our resources are utilized most effectively for whatever ends are decided upon.

One of the principal advantages of planning agricultural production by means of the influence of price supports announced in advance is that some of the uncertainty is removed for the small-scale farm operator. Support prices for hogs would need to be announced for a full year in the future. For this type of planning both numbers and marketing weights are variables; the feed and gain of the whole hog enterprise needs to be considered, as was done in figuring the marginal feed costs above.

If, on the basis of current and prospective food supplies, it is decided for a planning year that meat should be emphasized at the expense of fat, this can be accomplished by increasing the farrowings and reducing the market weights. The marginal feed costs can be used to show the feed required for the additional pork and the savings in feed from the reduction in fat. They would also serve as guides in determining the extent of adjustment that is desirable.

The principal limitations in the use of the marginal data may well be repeated here. The feed-live-weight information is based upon many trials so that it is reasonably satisfactory, but the figures regarding the composition of the edible portion of the hog must not be considered final until more trials are reported. Moreover, the measurements used do not conform to the actual yields of pork and lard obtained by packers. But on the assumption that standardized pork and residual fat may be used as indexes of the broad nutritional values involved, useful conclusions can be reached.

## POSTWAR AGRICULTURAL SETTLEMENT POSSIBILITIES IN CANADA

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THE present article is an attempt to summarize and explain in the briefest possible compass the main conclusions emerging from a comprehensive survey of agricultural settlement possibilities across Canada carried out under a directive from the Dominion Advisory Committee on Reconstruction. The manner of conducting the survey was as follows: The several provinces were requested to assemble such information as was already available or could be conveniently obtained on the settlement areas within their boundaries and on their physical and economic possibilities. The Dominion Department of Agriculture undertook to provide copies of all materials at their disposal as did other Federal agencies including the Census Division of the Dominion Bureau of Statistics, the Soldier Settlement Board, and the Prairie Farm Rehabilitation Administration. The Departments of Agriculture and Colonization of the Canadian National and the Canadian Pacific Railways contributed important documentary materials and valuable criticism and advice. Government, university and other authorities in all nine provinces were interviewed either by the author or a representative of the Committee and personal consultation was supplemented by correspondence—in some cases voluminous—with experts in all parts of the Dominion.

On the basis of the materials assembled, draft chapters were prepared on each of the nine provinces and submitted to appropriate provincial authorities for correction and criticism, and were revised in the light of the comments and suggestions received. As a result the materials embodied in this article may be said to carry the approval of senior departmental officials of the respective provinces with the exception of Quebec where the authorities withheld comment.

While much has been added during the past few years to our knowledge of agricultural settlement possibilities in certain sections of the Dominion, in other sections authoritative factual information is still very deficient. The conclusions concerning the latter must be regarded not only as tentative but liable to modification if and when more exact information becomes available. Indeed, for no portion of the Dominion is our knowledge by any means com-

plete, so that no part of the findings may be considered as final. Nevertheless from the materials available it has been possible to trace in broad outline, a picture of agricultural settlement possibilities across Canada which, inspite of its inadequacies may be of use in considering settlement potentials in the postwar years.

### *The Prairie Provinces*

Practically all of the suitable arable land in the brown, dark brown and black park soil zones and a portion of that in the grey wood soil zone has long since been occupied. The remaining unsettled areas are located in the main on the northern bush-covered fringe of settlement and in the valley of the Peace. Information concerning the settled areas is of the sort supplied by reconnaissance soil surveys covering practically the whole of the region and by more detailed economic surveys covering large sections of it. Concerning the Northern fringe, however, our knowledge is less adequate. Information on soils is derived largely from a few widely separated traverses, surveyors notes, aeroplane pictures and the like. Meteorological records are incomplete and scattered and only preliminary reports are as yet available from the progress of settlers surveys now under way. Under these circumstances even the most authoritative estimates of available agricultural acreage are very rough approximations.

In the brown and dark brown soil zones the principal impediment to more intensive settlement is lack of precipitation. Controls of a different sort limit the extension of settlement on the northern fringe. Outside the Peace, much of the potentially arable land occurs in small scattered blocks and is economically inaccessible. There is also the relatively lower fertility of the grey wooded soils generally, the cost of clearing and breaking (\$12.00 to \$25.00 per acre), the remoteness from markets, the shortness of the growing season and the increased hazards from frost as one moves northward. All these factors must be taken into account in evaluating post war agricultural settlement possibilities in the Prairie Region. The picture seems to be about as follows:

(1) In the three *Prairie Provinces* there probably now remain not over 12,500,000 acres of reasonably accessible, arable *unoccupied* land on the fringe of settlement, plus, scattered over the region as a whole, perhaps a million acres of idle or abandoned acreage suitable for resettlement. There also exists considerable *occupied*

acreage that is by no means fully utilized as judged by generally prevailing standards of land utilization, but because of the scattered distribution of many such quarter sections, the continuing trend toward larger farm units and the growing willingness and financial ability of resident farmers to buy up these lands and incorporate them into presently existing farm holdings, it is questionable whether such land should be included in estimates of acreage available for the *extension* of settlement.

(2) On the basis of the mean size of farm obtaining in the districts in which available unoccupied and abandoned lands are located, room might be found on presently unused arable lands for as many as 40,000 farm families. Further, if it were found practicable to complete all irrigation projects proposed by PFRA engineers for the Prairie Region (which is decidedly questionable) provision would be made for an additional net increase of perhaps 13,300 farm units. Unused arable lands and possible irrigation developments combined thus might provide lands adequate for the establishment of some 53,300 new settlers and their families. The above estimates assume the continued prevalence of commercial (as distinguished from subsistence) farming, and the absence of any radical change in current practices of land utilization except as occasioned by the extension of irrigation.

(3) As an offset to the above figures, account should be taken of some thousands of farm operators at present on sub-marginal holdings in the Prairie Provinces. Their number is not large in Manitoba, but in Saskatchewan, responsible estimates place the figure in the neighbourhood of 18,000, of whom about half (or 9,000) should be moved to unused lands elsewhere. This number would be about adequate to settle the remaining 3,000,000 acres of usable land in the grey wooded soil zone on the northern fringe of that province. Similar figures are not available for Alberta, but informed opinion places the total very much lower than that in Saskatchewan. The figure may be around 3,000. The provinces naturally consider that resident farmers on sub-marginal holdings have a preferred claim on lands available for new settlement within the provincial boundaries.

(4) If one adds to the possible demand from the above source, that of demobilized members of the armed services, returning industrial workers and younger sons of present farm operators in the respective provinces, and includes with the unused land and

lands capable of irrigation, farm acreages that may become available through the retirement of present farm operators because of advancing age, it would appear that the prospective demand for farm holdings in the post war years about offsets the prospective supply in the provinces of Manitoba and Saskatchewan. Only in the province of Alberta is there reasonable assurance of any significant opportunity for the extension of agricultural settlement through extra-provincial immigration.

(5) Were one to relate the remaining unused and irrigable acreage to the rate of new settlement in the decade following the last war, one might conclude that the settlement of the Prairie Region could be completed in a matter of five or six years after the close of the present hostilities. Such is not likely to be the case. In the first place, the remaining unused lands are for the most part bush covered and their settlement will be more costly and less rapid than that of the open prairies. Moreover, the rate at which new areas will be occupied will be tempered by governmental insistence on future settlement being planned, directed and supervised. Such a policy would impose severe limitations on the number of new settlers that could be placed each year. In the second place, the development of large irrigation projects is a long-term proposition and in most cases some time will be required before their feasibility is even established. In addition, all such projects involve heavy, nonrecoverable government expenditures, the timing of which, if they are incurred, will probably be determined by considerations other than the desire to speed up agricultural settlement (e.g., the need for public works to maintain full employment). In the third place, the heavy relief expenditures of the nineteen thirties have created a strong prejudice in official circles against settlement under conditions where the margin of income over expenditures is not sufficiently large to insure the prospective settler against becoming a future public charge. Expressed in terms of practical policy, this attitude means *detailed* soil and other surveys before opening each new region for settlement, and the adjustment of the *tempo* of settlement generally, not only to the availability of suitable settlers but to the expansion of markets adequate to absorb the surplus product.

(6) The number of farm holdings could also be increased through the more *intensive* utilization of lands in the black park zone (and perhaps to some extent in the grey wooded soil zone) where precipi-



tation is adequate for livestock and dairy farming without irrigation. To bring about such a change, however, greatly expanded markets for such products would need to be not only assured, but sufficiently profitable to offset the forces favouring large-scale cereal production and induce a switch-over to animal products as the principal source of cash income. In view of the number of unpredictable factors in the situation, no judgment is possible as to the likelihood of such a development nor as to the possible extent of its effect, if it were to occur, on the density of agricultural settlement in the regions affected. The chances are that any increase in the density of settlement through this cause would be gradual.

(7) Just as the maintenance of existing agricultural settlement in the Prairie Provinces is dependent on the securing of markets comparable in size to those in the decade following the last World War, so the increase of agricultural settlement in this region, whether through the extension of occupied acreage or the more intensive use of lands already under cultivation, would seem to depend on the expansion of markets in the years following the present war.

(8) While research findings have demonstrated that many agricultural raw and waste materials originating in this region might be put to industrial uses, the economic feasibility of any *large-scale* utilization of such materials in the face of other competitively available sources of supply, has not been proven. Indeed, the evidence to date is such as to discourage the expectation of any *major* impetus to agricultural settlement through this cause in the near future. The same applies generally to the industrial demand for the non-agricultural resources of the region. This picture, of course, may change over night, but until it does, increased settlement will continue, as in the past, to depend largely on the expansion of export markets.

### *British Columbia*

Because of its mountainous topography and heavy forest cover, arable acreage in British Columbia constitutes a relatively small proportion of the total area of the province; estimates range from 2 to 5 p.c. Agricultural settlement is limited to the Peace River Block in the north, the Central region bordering the east-west railway from Prince George to Prince Rupert, the semi-arid plateau of the South Central Interior, and to scattered smaller areas in the

river valleys and on Vancouver Island. Approximately 60 p.c. of the province is forest covered. To date only four and a quarter million acres have been subject to reconnaissance soil survey. Economic surveys and studies on the progress of settlers have been undertaken in certain districts but available authoritative information is still very limited. Virtually nothing definite is known as yet of the agricultural possibilities in the inter-range country north of Prince George which is credited by some with 500,000 acres of arable land, nor concerning other remote districts. These regions are accordingly excluded from the present discussion.

The factors controlling settlement in the Peace River Block of British Columbia are substantially similar to those in the adjacent section of Alberta. In Central British Columbia, the climate is about as severe as on the northern fringe of the prairies; precipitation is somewhat heavier. The soils when cleared are superior to the grey wood soils to the east, but inferior to the black park and dark brown soils of the Prairie Region. Cost of clearing and breaking is high. It is officially estimated at about \$75.00 per acre but colonization experts believe that this figure can be reduced to \$35.00 or less by proper organization and the use of recently developed techniques. In other parts of the province where timber stands are heavy clearing costs run into hundreds of dollars per acre. Limited local demand, relatively heavy transportation costs to large consuming markets and competition from the adjacent low cost prairie region have militated against the rapid development of the mixed farming and ranching in the interior sections of the province.

The agricultural potential insofar as it may be judged from available evidence which is admittedly inadequate, may be summarized as follows:

(1) In Central British Columbia there may be as much as 1,780,000 acres of usable arable land which, after deducting occupied acreage, would provide farm holdings with a quarter-section of arable land for about 11,000 new settlers. A rough estimate places the potential area suitable for settlement in the Peace River Block at 1,260,000 acres which, on the basis of a half-section farm unit, would accommodate some 3,900 farm families or a net addition of 2,400 to 2,500 beyond those already there. If as much as three-quarters of the abandoned or idle acreage in the province is suitable for resettlement another 130,000 acres should be added to the above figures and some 1,150-odd possible new settlers. Available

acreage in the Fraser Valley, the South Central Interior, Vancouver Island and in the other scattered sections of the province bring the total apparent, unused, arable land in the province as a whole to something in the neighbourhood of 2,500,000 acres, which might be expected eventually to provide locations for from 15,000 to 20,000 new settlers. It is impossible to be more explicit because of the paucity of reliable information concerning many sections of the province.

(2) If in addition, account is taken of occupied farms that may become available because of the advancing age of present operators, it would appear that the potential supply of arable lands in British Columbia is materially in excess of the prospective postwar demand on the part of residents of that province. Physical provisions might be made for several thousand agricultural immigrant settlers.

(3) It must not be assumed, however, that the settlement of these lands will be speedily effected. The official attitude in British Columbia is similar to that in the Prairie Provinces, as set forth above, and the physical problems and costs involved are even greater than in the grey wooded soils of Alberta and Saskatchewan. Moreover, the expansion of mixed farming in Central British Columbia (where a large part of the available acreage is located) will continue to be adversely affected by the presence of low cost surplus-producing areas in the adjacent Prairie Region. The British Columbia farmer must meet this competition if he is to secure a larger share of the local market for livestock and livestock products. There is no present expectation that the region can successfully produce such products for export.

(4) The possibility of developing a type of forestry where those engaged would have small arable acreages to supply their domestic requirements is being investigated, and if some satisfactory plan is devised, considerable numbers of new settlers might be located in the forest areas as part-time agriculturalists.

(5) With regard to local markets, there are reasons to expect that these will gradually increase with the development of industries utilizing both agricultural and non-agricultural raw materials. Some of the prospective industrial development will be designed to meet local demands e.g., the new flax fibre industry; but much of it will depend on the existence of favourable export markets. This is true of many of the proposals for expansion in the food processing and pharmaceutical fields and in industries utilizing the forest and

mineral resources of the province. Indeed, through the production of specialty crops, agriculture itself is becoming directly and increasingly dependent on extra-provincial demand. While it is probably true that in British Columbia there is not as close and direct a connection between agricultural settlement and export markets for agricultural products as in the Prairie Region, the indirect connection through the mineral, forestry and fishing industries is a factor of major importance.

### *Ontario*

In Ontario, opportunities for the extension of settlement are confined to the northern part of the province lying within the Canadian Shield. The largest areas of arable land are found in the Great Clay Belt of the Cochrane Plain and in the Little Clay Belt in the Temiskaming region. Other smaller blocks of arable acreage are located in the Rainy River, Thunder Bay and Dryden districts. In the whole of Northern Ontario, some 3,370,000 acres have been covered by reconnaissance survey, and associations have been established between forest cover and soil types. With the assistance of aerial photography a preliminary generalized soil map of the Clay Belt has been produced. Ottawa authorities are withholding official recognition of this map until the work is re-checked and a broader base secured for establishing associations between soils and forest cover. The competence of the soil surveyor who did the work is not in question but the results are so at variance with preconceived and widely publicized views as to warrant further investigation. In the meantime, the findings comprise the most reliable—indeed the only scientific—information as yet available concerning the general soil types in this section of the province and as such are used in the ensuing discussion. Recently completed progress of settlers and marketing studies add materially to our knowledge of conditions attaining in the Clay Belt.

The principal climatic control is the severe winter and the moderately short growing season. Precipitation is abundant. The soils are definitely inferior to the better soils in the Prairie Provinces and Southern Ontario and after the removal of bush cover and peat, require some years of skillful cultivation before attaining full productivity.

The more important conclusions as to the possible extension of settlement in the region are as follows:

- (1) Preliminary surveys suggest that in the whole of Northern

Ontario there is a total of about 1,700,000 acres of A grade land<sup>1</sup> and 2,750,000 acres of B grade land suitable for full-time agriculture, which on the basis of 160 acres of arable land per farm, would provide farmsteads for some 28,000 operators. In 1941, there were something over 12,000 occupied farms in this region, and were provision made to move such of the present settlers as are on low to better grade lands, it would appear that suitable land may be available to accommodate as many as 16,000 additional purely agricultural settlers in this region. The weight of evidence supports the view that the remaining C grade land (about 6,000,000 acres) should be kept in forest and operated with agriculture as a part-time subsidiary provided some workable and stable combination can be found; and that the balance of the low grade land (perhaps 10,000,000 acres) be devoted exclusively to forestry.

(2) If one adds to the unused lands available in Northern Ontario say half of the idle or abandoned lands in Southern Ontario and the farms that will become available through the normal ageing of present farm operators, it would appear that, like Alberta and British Columbia, the province of Ontario has arable lands considerably in excess of the prospective demand of her own population for farm holdings during the postwar years. The excess acreage may well be adequate to accommodate 10,000 to 15,000 agricultural settlers from outside the province—perhaps more.

(3) Yet there are several reasons why the settlement of these lands may not be as rapid as one might hope. As in the Western provinces, official opinion is that future settlement should be planned and supervised. Past settlement procedures in the North country have not been entirely satisfactory. Moreover, as with Central British Columbia, the agricultural settler in Northern Ontario has to face competition in the products he is best able to produce, from the low cost surplus-producing Prairie Region adjoining the province on the West—as well as from the older settled parts of Ontario to the South. Besides, much of the better land occurs in long narrow strips on either side of the many rivers traversing the region from North to South. This adds to the difficulties and costs of settlement. Much research, experimentation, education and organization work remains to be done before the problems involved in the settlement of this area are solved, and its development will involve substantial further outlays by governing bodies.

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<sup>1</sup> Mr. G. A. Hills, Dominion Land Surveyor, states that A grade land in Northern Ontario is about equivalent to C grade land in the Southern part of the province.

(4) Local markets, however, are adequate to absorb greatly increased amounts of agricultural products from the local farm operators. In the Great Clay Belt, resident farmers are supplying only about one-fifth of the local urban requirements of farm produce despite the one-way freight advantage from outside points.

(5) In Ontario, the industrial processing of agricultural products is already further advanced than in the Canadian West. The writer has found nothing to suggest that prospective developments, either in these industries or in those using other classes of raw materials, are likely to be such as to induce any radical or rapid increase in the density of agricultural settlement.

### *Quebec*

Physiographically, the Province of Quebec may be divided into three regions, viz., the Canadian Shield which occupies most of the central and northern parts of the province, the St. Lawrence Lowlands on either side of the river as far east as Quebec City and including the island of Anticosti, and the Appalachian Highlands lying east of a line joining Quebec City and Lake Champlain and extending to the provincial boundary.

The Canadian Shield is underlain by hardened sediments and igneous rocks. As in the Ontario section the topography is uneven and the soil cover largely removed by glaciation, though over a great part of the area sufficient has been retained to support a forest growth (though insufficient for agriculture). Generally speaking, therefore, the physiographic and soil conditions are not suited for agriculture except where sediments deposited in the basins of glacial lakes have reduced the inequalities of the surface and produced arable lands, e.g. in the Clay Belt of Abitibi and Témiscamingue counties and in the Lake St. John region, and in a zone of Piedmont some 50 to 80 miles wide in places, between Ottawa and Quebec, along the outer edge of the region. Much the same situation obtains in the Appalachian region. In this section of the province, arable land is confined largely to the few river valleys stretching inland from the St. Lawrence and the Atlantic and to the narrow fringe of low lying land skirting the northern and eastern shores. In the St. Lawrence Lowlands all suitable agricultural land has long since been occupied.

Because of the generally uneven topography of the province as a whole and of climatic and other limitations in the far north, actual and potential agricultural land constitutes a relatively small

proportion of the total area. Moreover, much of the potential agricultural acreage is so far north, so inaccessible, so costly to reclaim, so unevenly distributed or so low grade that though its cultivation might be physically possible, its use would be quite uneconomic at the present time.

Accurate information regarding land settlement possibilities in the province of Quebec is much more deficient than in Ontario. Progress of settlers and marketing studies have been made in northern portion of the province, but soil surveys are almost entirely lacking. Practically none of the unused lands of the province have been covered by even reconnaissance survey. The ensuing conclusions concerning agricultural settlement potential must be regarded as very tentative and possibly somewhat wide of the mark.

(1) Early estimates placed the acreage available for agricultural settlement in the province at an unduly high figure which has been progressively reduced as the bases of estimation have been subject to more rigid examination and additional information has been obtained concerning the areas in question. The most recent official estimate was made in 1943. In that year, the Deputy Minister of Colonization stated that there still remains in the province suitable unsettled land for about 100,000 new agricultural farm holdings or in the neighborhood of 10,000,000 acres—or 12,000,000 at the outside.

If the findings of the soil reconnaissance and aerial survey in the Ontario section of the Clay Belt should be found on investigation to reflect conditions in the Quebec section (where most of the province's unused lands are located), further drastic downward revisions in the estimates may well be necessary. Indeed, available meteorological data indicate that a considerable portion of the 6,000,000 acres credited to the unorganized portion of Abitibi County is beyond the climatic margin of agricultural use.

Of course in Quebec, the criteria for judging the suitability of land for agricultural settlement are somewhat different from those in Ontario and the Canadian West, where lands are assessed with a view to their use for commercial agriculture. Subsistence agriculture prevails in the colonization areas of French Canada and farming is regarded more as a way of life than as a business enterprise.

Nevertheless, after making allowance for differences in stand-

ards of suitability, there are grounds for suspecting that even the latest official figures on available agricultural acreage will be found to be as much as 25 to 30 percent too high. Perhaps a figure of 7,500,000 acres and 75,000 farm holdings might be accepted tentatively as a safer estimate of the agricultural settlement possibilities in this province.

(2) If to these figures one adds such of the 5,321 idle or abandoned farms (535,000 acres) as are suitable for resettlement, and another 10,000 or more farms which will become available through the ageing of present operators, it is clear that Quebec has unused agricultural lands materially in excess of the prospective postwar demand of her own citizens for new farm holdings.

This circumstance must not be taken to mean that these surplus lands will be available for settlers from elsewhere. It is definitely the policy of the province to retain them for her own people. Under the present colonization policy their settlement will be spread over the next three or four decades.

(3) While new settlers in Northern Quebec encounter the same types of difficulty as those in Northern Ontario, the admirable settlement policy of the province of Quebec and the philosophy of the settlers themselves are effective offsetting factors. Local urban markets are adequate to absorb all of the produce that a much larger farm population will have for sale. It is, therefore, reasonable to count on a progressive and orderly extension of colonization in this (and other areas within the province) after the war.

(4) What has been said about the probable effect of prospective industrial development on agricultural settlement in Ontario would seem to apply equally to the province of Quebec. The same is probably true concerning the possible extension of forest settlement with agriculture as a part-time subsidiary.

### *The Maritimes*

(1) In the Maritimes as a whole, the trend in the number of farms and in occupied farm acreage has been downward for the past several decades, so that an extension of settlement would involve a reversal of a long established over-all trend. In New Brunswick, the most recent authoritative opinion places the maximum acreage that *could* be farmed at 30 percent of the total area of the province or 5,300,000 acres, of which only a limited portion is really suitable farm land. Approximately 80 p.c. of the area of the province is in



forest. Occupied agricultural acreage in 1941 was just under 4,000,000 acres. Opportunities for the extension of agricultural settlement in this province would thus appear to be relatively limited, although recent experience has shown that it is possible to promote successful settlement (on a part-time basis with forestry) in the four Northern counties. By and large, however, informed opinion favours using presently forested areas for forestry rather than agriculture. In New Brunswick and Nova Scotia combined, there are some 100,000 acres of marshland that might be reclaimed, but such land when reclaimed would not appreciably increase the number of farm operators in these provinces. It would rather improve the economic status of upland farmers who would make use of the acreage to round out their farming operations. A review of the available evidence on Nova Scotia suggests that save for a possible moderate extension of part-time farming, no significant possibilities exist for the extension of agricultural settlement in that province either at the present time or in the immediate future. Such development as is likely to take place promises to be in the direction of the more intensive and effective use of present farm acreage with a resulting higher standard of life for its present occupants. The same applies to Prince Edward Island, where occupied agricultural land constitutes 94.5 percent of all potential farm land.

(2) That is not to say that much cannot be done through better farm practices, the securing of enlarged export market, the encouragement of tourist trade, the reorganization and revival of the fishing industry, the increase in the number of processing plants for agricultural raw materials, etc., to increase agricultural production and improve the status of resident farm operators.

(3) Only in New Brunswick are usable farm lands available to meet the prospective demand for new farm holdings on the part of residents of the province, and it is more than probable that, as in the past, many young men will prefer unused lands in other parts of Canada, to those within their native province.

(4) Recent studies are by no means pessimistic concerning prospective industrial expansion in the Maritime section of Canada,<sup>2</sup> but save for a possible stimulus to part-time farming through

<sup>2</sup> See for example, *The Economic Effects of the War on the Maritime Provinces of Canada* (publication of the Institute of Public Affairs, Dalhousie University) by B. S. Keirstead. See also, Submission of the Province of New Brunswick to the Special Committee on Reconstruction, Ottawa, December 2, 1943.

the reorganization of the fishing industry, such expansion as may be expected is not likely to be on a scale adequate to bring about any radical change in farm practices or provide any significant impetus to more intensive agricultural settlement.

### *The Yukon and Northwest Territories*

Exploratory surveys during the past two summers have established the existence of considerable acreages of physically arable land mostly in the region tributary to the MacKenzie River but these lands are so inaccessible, and exact knowledge concerning their soils and climatic environment is so limited, that, like the inter-range country of Northern British Columbia, they are not included in the present survey of agricultural settlement possibilities in the post war years. This omission finds further justification in the fact that the balance of informed opinion regards both the tempo and the extent of their possible future development as dependent on the expansion of local markets through the exploitation of the non-agricultural resources of the region. In this matter reasonably accurate prediction is as yet quite impossible.

### *Canada as a Whole*

The over-all picture for Canada as a whole thus suggests something between 27,000,000 and 29,000,000 acres of unused, reasonably accessible land which is regarded as physically suitable for agricultural settlement by experts in the provinces in which they are located.<sup>3</sup> Included in both these totals are 10,000,000 acres in the province of Quebec, which, for reasons stated above, may well prove an over-estimate by 25 percent or more, in which case the above over-all limits would be reduced to say 25,000,000 to 27,000,000 acres. Whatever its exact amount, provincial authorities in the province of Quebec hold the view that all unused agricultural land in the province will be required to provide farm holdings for the increase in local farm population expected during the next few decades.

Unused agricultural land in Canada outside Quebec is estimated at between 17,000,000 and 19,000,000 acres, which acreage, on the basis of land utilization practices in the regions in which it is located, might be expected to accommodate between 70,000 and

<sup>3</sup> Potential agricultural acreage in the Yukon and Northwest Territories is not included in these totals for reasons stated in the text.

80,000 full-time agricultural settlers. Proposed irrigation projects in the Prairie Region, if and when completed, would provide for a further net increase of something over 13,000 farm units. The total potential increase is thus set at between 83,000 and 93,000. These are outside figures. Detailed investigation has yet to demonstrate the physical and economic feasibility of much of the proposed irrigation development.

Present operators on sub-marginal holdings are regarded by provincial authorities as having a preferred claim on unused agricultural lands. The number of operators in this category who *should* be moved to other locations is placed at 9,000 in Saskatchewan; in the absence of any authoritative estimate for Alberta, a figure of 3,000 is accepted as a reasonable guess, making a total of say 12,000.<sup>4</sup> How many will or can be moved is not known, but in the meantime, the provinces concerned feel that alternative holdings should be reserved in the unsettled districts within the provincial jurisdiction. Such being the case, a figure somewhere between 71,000 and 81,000 might be taken as more appropriately representing the number of new farm holdings, outside Quebec, potentially available for the *extension* of settlement after the war.

One gathers from provincial experts that the probable time required to properly develop this potential will be between ten and twenty years, assuming, of course, that it is economically feasible to proceed without interruption and in an orderly manner. In some provinces the development would probably be more rapid than in others.

In addition to full-time agricultural settlers, many foresters may be placed on small agricultural holdings in the vast forested areas across Canada as more effective ways of combining forestry and part-time farming are devised. The number may run to many thousands. There is scope also for the extension of part-time farming in combination with the fishing, mining and urban industries generally. Settlement opportunities likely to be offered by possible developments in these several fields cannot be assessed at the present time, yet they constitute an important part of the post war picture.

In three important regions outside Quebec, viz., Northern Ontario, Northern Alberta and Central British Columbia, lands suit-

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<sup>4</sup> The removal of operators from sub-marginal lands in Northern Ontario was provided for in the over-all estimates employed above.

able for full-time agriculture are available in excess of the immediate prospective requirements of residents of the provinces in which they are situated. Their combined settlement potential is placed at something over 50,000 new farm families. Out of this total, provision must be made for a limited number of demobilized members of the armed services, for whom farm holdings are not available elsewhere, as well as for some persons returning to agriculture from war industries. In addition, there will be the requirements of such of our surplus rural population as desire to settle in these districts as they are developed. No precise estimate of these total domestic requirements is possible, but if they were to amount to as much as half the total supply, there would still be accommodation for some 25,000 immigrant settlers. The actual figure may be appreciably higher—or somewhat lower. It cannot be determined in advance, but obviously there is a definite limit to the number of agricultural settlers Canada can accept from abroad.

Similarly, the increase of settlement that may occur through the more intensive utilization of lands already occupied cannot be determined with any degree of precision. Increased settlement, whether through the extension of agricultural acreage or its more intensive use, is conditioned ultimately by the demand for agricultural produce.

In this connection, the studies of Dr. McFarlane, Dr. Saunderson and Dean Kirk, which summarize all authoritative evidence concerning *possible industrial uses of agricultural products*, indicate that in view of the fact that plastics, alcohol and other important products can be made much more cheaply from raw materials of non-agricultural origin, no phenomenal increase in the industrial demand for agricultural products is to be expected in the post war period. A gradual increase is assured, but it is definitely not likely to be on a scale sufficient materially to affect agricultural settlement possibilities. Moreover, such fragmentary evidence as the writer has been able to secure suggests that the same is likely to be true of our industrial development generally.

As to the possible increase in domestic demand through *improved dietary standards*, Dr. W. C. Hopper of the Economics Division, Dominion Department of Agriculture, finds that to raise the diet of every Canadian to the standard established by the Canadian Council on Nutrition would require an increase of about 2,000,000 acres to provide feed for dairy cattle and the necessary additional

fruits and vegetables.<sup>5</sup> This is about equivalent to the acreage that would be freed if our annual exports of pork and bacon to Great Britain were reduced by two hundred and seventy-five million pounds. It is equivalent in amount to approximately 8 percent of our estimated available unused agricultural lands. Clearly, any major impetus to agricultural settlement in the Dominion, if it is to come from improved nutritional standards, must come through increased export demand arising from improved dietary standards in other countries.

That is not to say that the supplying of adequate dietary requirements of our own population might not result in the employment of more labour on our farms. That will depend in large measure on the economies in labour effected by the new farm implements that have been specially designed for use on smaller farms after the war.

The above analysis and conclusions are based on the assumption that settlement programs (at least outside Quebec) will aim at the development of commercial rather than subsistence agriculture. Such is generally the intention, and for reasons that seem proper and adequate to provincial officials. It may be that subsistence farming could form a permanent part of the agricultural economy of English-speaking Canada just as wage differentials persist in the cities. There are arguments on both sides. The fact is, however, that that type of settlement is not regarded with favour by the provinces controlling most of the remaining unused agricultural acreage.

Finally, it must not be inferred from the emphasis placed on the physical and economic determinants of agricultural settlement, that the author holds the view that physical and economic factors should or will be the sole determinants of future settlement policy. Political and humanitarian considerations will bulk large in the post war world and may not always conform with that which is economically desirable. Under such circumstances, compromise is inevitable—but such compromise as is within the limits set by physical and economic controls.

<sup>5</sup> *Food Consumption in Canada in Post-War Years with Special Reference to Nutritionally Adequate Diets* by S. G. Hopper. Paper delivered at CSTA Convention, Toronto, June 28, 1944.

## POSTWAR LAND SETTLEMENT OPPORTUNITIES IN THE NORTHERN GREAT PLAINS\*

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**A**N OVERALL analysis of agricultural resources, demand for agricultural products, and available labor force in relation to the probable number of postwar land settlement opportunities in the Northern Great Plains is contained in this article. The ways in which individual settlers may be aided or guided in seeking these opportunities are not considered.

The Northern Great Plains contains the western margin of the Corn Belt and much of the marginal wheat land of the country. About 68 percent of the land in the Northern Plains is used for grazing. Except in the eastern part and certain local areas elsewhere in the region, the grazing makes possible an extensive type of live-stock production. The production of the Plains is subject to wide annual fluctuations due to variations in precipitation and temperature.

Most of the agricultural products of the Plains are consumed in other parts of the United States and in foreign countries and so must be transported considerable distances to market. Wheat, the principal cash crop, enters the export market in quantity. As wheat occupies more land than any other crop, the level of foreign trade is important to the region.

Because of the marginal nature of much of the agriculture of the Plains, price shocks that come from the fluctuations of the national economy have a serious impact. When low periods in agricultural production coincide with low prices for farm products, the effects of both are multiplied. On the other hand, a combination of high production and high prices for the production brings a boom period. These extremes make it difficult to establish any concept of a normal period or normal income or normal value level.

The postwar economic situation will have an important bearing on agriculture in the Plains. It has been estimated that if we have

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\* Some of the material for this article is drawn from an analysis made by staff members of the BAE, Lincoln, Nebraska, for the Northern Great Plains Council's subcommittee on Economic and Social Adjustments and submitted in a committee report "Land Settlement Opportunities in Relation to Postwar Economic Conditions, Northern Great Plains." Data for the Northern Great Plains are the totals for the seven States of North Dakota, South Dakota, Nebraska, Kansas, Montana, Wyoming and Colorado.

full employment and the 1943 price level, the national income would be about 150 billion annually. With this level of national income, foreign and domestic demand for farm products would absorb an output not greatly different from the 1943 production.<sup>1</sup> This would bring only minor adjustment problems for agriculture in this region, except in wheat farming—the world is still carrying a wheat surplus. Any lessening in economic activity will create severe maladjustments in the agriculture of the Plains.

### *Adjustment of Population to Resources*

One measure of a region's resources is its ability to support population. While some areas were expanding and others declining, total farm population in the Northern Plains about 1920 reached a rather stable level which continued until 1934; then its farm population decreased about 400,000 from 1934 to 1940.

The farm population of the Plains has a natural increase that is greater than needed for replacement, and so people have migrated from the farms to cities. From 1920 to 1930 the net change in the rural farm population due to migration was lower in the Plains than the national average. Only in Montana did the migration rate exceed the national average (table 1).

TABLE 1. NET CHANGE IN RURAL FARM POPULATION DUE TO MIGRATION  
1920-30, 1930-40

State	1920-30		1930-40	
	Thousand	Percent	Thousand	Percent
Montana	- 51	-22.4	- 43	-23.0
Wyoming	- 6	- 8.8	- 9	-13.0
Colorado	- 31	-11.7	- 59	-22.6
North Dakota	- 71	-18.0	-110	-29.9
South Dakota	- 43	-11.9	-115	-31.8
Nebraska	- 95	-16.2	-137	-25.4
Kansas	-125	-17.0	-145	-22.4
United States	-6,300	-20.0	-3,498	-12.7

Source: USDA Misc. Pub. 265, November 1937, and BAE mimeographed report "County Variations in Net Migration from Rural Farm Population, 1930-40," December 1944.

In the period 1930-40 the net change in farm population due to migration far exceeded the national average—in only one State, Wyoming, was the migration rate about the same as the average. In all the others, the rate was about two to two and one-half times

<sup>1</sup> This estimate of probable demand is taken from "What Peace Can Mean to American Farmers," an unpublished study by the Bureau of Agricultural Economics.

the national average. The net loss due to migration during this drought period was over 600,000. This meant tremendous adjustments in the number of farms and the use of resources. From 1930 to 1940 the number of farms decreased from 580 thousand to 532 thousand.

Many farm people were forced to leave the Plains even though the alternatives on the West Coast and elsewhere were not very good. Such a migration had been forced in small areas in the early years of settlement, but this was the first time that so large a part of the region was involved (table 2). Fifty-five percent of the counties in the Northern Plains had a net migration loss of over 25 percent.

TABLE 2. DISTRIBUTION OF COUNTIES IN THE NORTHERN GREAT PLAINS REGION BY PERCENTAGE CHANGE IN THE RURAL-FARM POPULATION DUE TO MIGRATION, 1930-40

Percentage change	Distribution of counties	
	<i>Number</i>	<i>Percent</i>
Greater than -45 percent	21	4.6
-45 to -35 percent	79	17.2
-35 to -25 percent	153	33.3
-25 to -15 percent	127	27.6
-15 to - 5 percent	50	10.9
- 5 to 5 percent	15	3.3
5 to 15 percent	2	.4
15 to 25 percent	9	1.9
25 to 35 percent	3	.6
35 percent and over	1	.2
Total	460	100.0

Source: "County Variation In Net Migration from The Rural-Farm Population, 1930-40," Eleanor H. Bernert, BAE, USDA, Washington, D. C., December 1944.

War has brought many additional shifts in the total population pattern in the Northern Great Plains States—urban as well as rural. The probable situation at the end of the war can be visualized only through a careful study of these changes. Census estimates for these seven States, based on ration book 4, indicate a civilian population decrease to 5,709,000 as of November 1, 1943. This is a loss of 606,000 thus far during this war or about 9.6 percent of the total civilian population in 1940. When the estimated natural increase in the population of 189,000 for this period is considered, the gross civilian population loss appears to be about 795,000. Probably one half of this loss was accounted for by the armed forces and the rest by out migration. Additional loss in the total population will probably occur from 1943 to the end of the war.



The farm population of the region was declining during this same period. Preliminary estimates indicate a decline of 18 percent from 1940 to 1944. This represents a farm population loss of nearly 400,000, almost equal to the farm population loss during the drought period. This loss has been to the armed services, to the towns and cities of the region, and to migration out of the region. The farm population in 1944 is about 30 percent less than in 1930. As the agriculture of the region has been prosperous since 1940, the farm population loss, beyond those entering the armed services, must be due in considerable measure to retirements and to migration to better opportunities elsewhere. Very little information is available as to what has happened to the number of farms and the size of farms, but it seems probable that the number has declined at least 5 percent since 1940 and that the land vacated has been combined with other farms. If this is true, it would seem to indicate that permanent adjustments have taken place in the agriculture of the Plains.

### *Impact of Demobilization*

The Bureau of Labor Statistics has estimated that about 547,000 workers will be demobilized in the Northern Plains in the immediate postwar period.<sup>2</sup> About 393,000 would be from the armed forces and 154,000 from war work in the region. The relative size of this total group is indicated by the fact that it is 27 percent of the total number employed in the region in 1940. This is a rough estimate, of course, and only approximates the size of the demobilization problem because many lines of employment have been stimulated by the war. These contributing industries and services may not continue at the same level. The impact of demobilization will depend to a considerable extent on the period of time over which demobilization takes place and the general level of economic activity that is maintained.

There is no way of learning accurately, in advance, the number of men who will want to enter and return to farming because it depends to some extent on the relative position of agriculture and alternative opportunities during the demobilization period. A recent study of postwar occupational plans of officers and enlisted men gives the estimate that there are "about 800,000 men in the

<sup>2</sup> This estimate is taken from an article in the Monthly Labor Review, July 1943, entitled, "Relative Severity of Post-War Demobilization by States," prepared by Emile Benoit-Smullyan, Bureau of Labor Statistics. The estimate assumes that about 77 percent demobilization of the armed forces will occur in the immediate postwar period.

Army alone with plans to farm, as of Summer, 1944.”<sup>3</sup> This study also indicates that about the same number plan to farm as left farming to enter the Army and that they will return to the same general region where they lived before. About two-thirds of the men who definitely plan to farm have in mind a particular farm which they expect to operate or work on.

Applying the results of this study to the Northern Plains, it may be concluded that about the same number plan on farming in the region as left to enter the Army. On the basis of the relation of the farm population of the Northern Plains to the nation as a whole, this number is estimated at 45 to 50 thousand planning to return there during the immediate postwar period. Many of these men will have definite plans, often to take over or work on the family farm, but at least one-third will not have definite plans and will be looking for a farm.

Probably not a great many of the workers who have gone to war work in other areas will return.<sup>4</sup> Some of the workers in war plants in the region may want to enter or return to farming, but no information is available as to their intentions.

The exact number will be determined by economic conditions, but it seems probable that most farm seekers in the immediate postwar period who are not now on farms will be men from the armed forces who have had farm experience in the Northern Plains. In addition, there will be some from the armed services and a small number from war industries who have had no farm experience. Although the majority of these men were apparently not farm operators when they entered the armed forces, most of them now plan to enter farming as operators.

An appraisal of their prospects is now attempted.

### *Farm Vacancies*

Many people believe that there will be numerous opportunities on existing farms as the older farmers want to retire. For example, the Land-Grant College report on Postwar Agricultural Policy says

<sup>3</sup> “Soldier’s Plans For Farming After They Leave The Army,” Post-war Plans of the Soldier Series Report No. B-131, 20 December 1944, Information and Education Division, Headquarters, Army Service Forces.

<sup>4</sup> Nearly 16,000 workers originating in this region were employed on war work in Portland, Oregon, area in 1943 (*The American City*, Dec. 1943). A survey of workers in Kaiser’s shipyards indicated: 21 percent with plans to stay in the Portland area, 31 percent would stay if they could get jobs, only 24 percent declared they would leave for home when their war jobs are finished. The rest were undecided (*Business Week*, March 4, 1944). The uncertainty of their plans was indicated by the fact that 86 percent had no postwar job in prospect.

"The largest opportunities for veterans or others to return to farming are on existing farms of known productivity from which older operators wish to retire—and many will retire, since the average age of farmers is now high."

Farm operators apparently retired at a lower rate from 1930 to 1940 than in the period from 1920 to 1930. The question arises whether this slow rate of retirement during the depression has continued during the war years. If it has, more farming opportunities will be available at the end of the war than otherwise would be the case.

Recent studies in a few selected areas indicate that 1.8 percent of the farmers retired during the period 1941 to 1942.<sup>5</sup> This is about twice the rate which normally is expected. Further, the rate of retirement was 2.9 percent from 1942 to 1943 and 3.3 percent from 1943 to 1944. This study cannot be considered conclusive, but it does suggest that there may not be so many delaying their retirement as is frequently assumed.

This same study indicated that nearly 2 percent of the farm operators left annually for other employment. This rate of change in occupation from 1941 to 1944 can be considered above normal; a lower rate should be expected to prevail after the war. Change from farm to nonfarm occupations is very difficult to estimate since it depends so heavily upon the relative prosperity of agriculture and industry.

In a 16-county survey made in Montana, about 8 percent of the operators indicated that they plan to retire during the first year after the war is over.<sup>6</sup> No check was made on the number who planned retirement during the succeeding years. A survey made by the Research Division of the Farm Credit Administration through the secretaries of the National Farm Loan Association indicates that 38 percent of the owners and 12 percent of the tenants plan to retire after the war, but no check was made as to how soon after the war these operators would retire.<sup>7</sup> A survey in South Dakota

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<sup>5</sup> An unpublished study of tenure trends in Montana, South Dakota, Nebraska and Kansas by the Bureau of Agricultural Economics. About 2,300 operators included in study for period 1941-1944. Records show change from one AAA sign-up to another.

<sup>6</sup> Letter from R. B. Tootell, Agricultural Economics Department, Montana State College.

<sup>7</sup> "Postwar Plans of Farm Boys and Need for Farm Financing," Research Division, FCA of Omaha, June 1944. This report points out that "close study of the data suggests that the sample includes a larger-than-average proportion of farmers about ready to retire and that the actual percentage of all farmers retiring after the war will be less than the rates stated." This is probably true of the Montana and South Dakota studies to a less extent.

indicates that 8.0 percent of the operators plan to retire after the war, presumably during the first few years.<sup>8</sup> The suggested rates of retirement in various areas of the State ranged from 7 to 11 percent. In fact, all three of the above studies indicate considerable variation in the rate of contemplated retirement, from one area to another and from one year to another, depending upon such factors as age composition, tenure status of operators, and general economic conditions.

Intentions to retire probably are always higher than actual retirements, because so many things can disrupt personal plans, even over so short a period as two or three years—crop failures, unexpected financial losses, unexpected expenses. Then, too, many operators are evidently not delaying retirement until after the war, but are taking advantage of the current high prices they can get for their machinery and the strong land market.

Estimate cannot be accurate, but retirement and death could make farms available in the Northern Plains at the rate of 15,000 annually in the next few years following the war. All of the farms vacated will not become available to new operators because many will be taken up by family members already on the farm. A recent study by the Bureau of Agricultural Economics indicates that the Northern Plains, like most farm areas, has a high replacement rate.<sup>9</sup>

	<i>Replacement rate 1940-50</i>
North Dakota	189
South Dakota	184
Nebraska	169
Kansas	145
Montana	138
Wyoming	158
Colorado	159
United States	167

In North Dakota, for example, "vacancies" due to death and retirement because of old age would provide opportunities for only 53 per cent of the men reaching 25 according to estimates. There was considerable variation in replacement rates in the various counties studied (table 3).

This study concludes that, for the United States as a whole, the heavy migration from the farm population since 1940 has in-

<sup>8</sup> Hoglund, C. R., Postwar Farming Adjustments and Opportunities in South Dakota, South Dakota Agricultural Experiment Station.

<sup>9</sup> Replacement rate: Assuming no migration and constant mortality rate, the number of men in the rural-farm population who would reach their 25th birthday for every 100 men, 25-69 years old in 1940, who would have reached age 70 or would have died.

TABLE 3. DISTRIBUTION OF COUNTIES BY REPLACEMENT RATES FOR RURAL-FARM MALES AGED 25-69, NORTHERN GREAT PLAINS STATES, 1940-50

Replacement rate	Distribution of counties	
	Number	Percent
Under 100	7	1.5
100 to 149	173	37.5
150 to 199	202	43.9
200 to 249	61	13.2
250 to 299	9	2.0
300 to 349	6	1.3
350 to 399	2	.4
400 and over	1	.2

Source: "Replacement Rates for Rural-Farm Males Aged 25-69 Years, by Counties, 1940-50," Conrad Taeuber, BAE, USDA, Washington, D. C., Dec. 1944.

volved older people as well as the young people who usually supply most of the migrants. The preference of the armed forces for young men has involved a particularly heavy loss of men who were 15 to 24 years old in 1940. In spite of the great decrease in the number of these young men since 1940, there are still enough left on farms to fill "vacancies" which are likely to result from death or retirement of older men living on farms during the decade 1944-54.<sup>10</sup>

The plans of many families to turn over their farms to sons who are in the armed services will necessarily mean increased migration of other farm boys because of the limited number of vacancies in relation to potential farm operators.

#### *Closer Settlement in Developed Land Areas*

Most of the land in the Plains was homesteaded in 160 and 320 acre units. Subsequent developments have indicated that in most parts of the area this size is too small for an economic farm unit. Consequently, a process of combination of farm and ownership units has been going on since homesteading days. This process has been given added impetus by drought and by technological improvements that enabled one man to handle more land. The war may have slowed down this trend but has not reversed it. Machinery production has been restricted, but the number of farms having tractors and accompanying equipment has increased. The labor shortage has stimulated the development of many labor-saving devices that will be generally available after the war. It is certain that the amount of cropland one man can handle will increase

<sup>10</sup> Taeuber, Conrad "Replacement Rates for Rural-Farm Males Aged 25-69 Years, by Counties, 1940-50," Bureau of Agricultural Economics, December 1944.

through both further mechanization and improvement in equipment. Some progress will be made in reducing the labor required in handling livestock. The net result will be a tendency to hold the present high production per worker and to gradually increase it.

As there are still a number of small farm units in the Plains it can be expected that the trend will be to increase the size of farms after the war. Subdivision and closer settlement would be going against this trend and its effect would be offset by consolidation of other farms.

Indications are that there will be some voluntary subdivision by individual farmers. Some units are large enough to permit dividing into two or more family-sized units, but the subdivision of smaller farms might mean inadequate units for all concerned. The level of land prices at the time of subdivision will be very important because a higher overhead for buildings and machinery will have to be carried by the smaller farms. It seems very doubtful that a net increase in number of farm opportunities will occur through subdivision.

*Land in military sites.*—About 667,000 acres of land were purchased by the War Department from private owners in this region from July 1, 1940 to October 1, 1943.<sup>11</sup> An additional 22,000 acres were transferred from other federal agencies. This land was acquired for military camps, airfields, storage depots, ordnance plants, gunnery ranges, internment camps and other military installations. Most of the acquisitions by the War Department are in Kansas, Colorado, Nebraska and South Dakota, with only a small acreage in Montana and Wyoming, and none in North Dakota. Of the 667,000 acres bought from private owners, 282,000 acres or 42 percent were cropland, 330,000 acres were grazing land, 1,000 acres were forest land, and 53,000 acres were waste or miscellaneous land.

The land in these sites has been altered for military purposes, and most of the farm buildings and farm improvements have been removed. Factories, concrete runways, storage igloos and barracks have been constructed. Meanwhile grading the land and digging foxholes and trenches have mixed subsoil with the topsoil. These modifications have affected about 119,000 acres.

The future possible agricultural use of this land in military sites, if it is returned to agricultural use, is as follows: Without expensive rehabilitation, about 225,000 acres would be suitable for cropping,

<sup>11</sup> The discussion does not include any analysis of about 50,000 acres purchased by the Navy Department.

332,000 acres for grazing, and 900 acres for forestry, while 110,000 acres would be covered by heavy construction or would be otherwise unfit for agricultural use.<sup>12</sup>

No information is available as to the amount of land that will be declared surplus and returned to agricultural use after the war. It seems probable, however, that some of the land will be retained for military establishments, some will be used for industrial purposes, and some of the airfields will be used for commercial aviation. If all of the land in military sites which is now suitable for agricultural use were subdivided into adequate family-size units, it would furnish about 1,000 settlement opportunities.

*Settlement on other public lands.*—There is an estimated 123 million acres of other public lands in the region. Several suggestions have appeared in the press that these public lands be made available for settlement. An examination of the character of these lands and the use to which they are now being put indicates that very little of this public land is suitable or available for settlement.

The kinds and amounts of public ownership in the seven States are estimated as follows:

<i>Kind of public ownership</i>	<i>Millions of acres</i>
Federally-owned or controlled:	
National parks and monuments	4
Wild life projects	1
National forests	41
Indian reservations	16
Land Utilization projects (SCS)	4
Federal grazing districts	25
Public domain outside of grazing districts	6
Total federally-owned (except military land)	97
State ownership:	
School and endowment lands	18
State credit agencies	2
Total state ownership	20
County ownership:	6
Total public ownership	123

The national parks, monuments, wild life projects, and forests were reserved or acquired because of their high public values for recreation and watershed protection. These areas probably contain scattered tracts that are suitable for farming, but it is generally believed that the public values would be injured by allowing such

<sup>12</sup> Disposition of Surplus Property, No. 1, Hearings before the Subcommittee of the Committee on Public Buildings and Grounds, House of Representatives, 78th Congress, Second Session, Government Printing Office, Washington, D. C., 1944.

private use. A considerable area of the forest lands are now used for controlled grazing. In the postwar period it may be expected that more land in the region may be needed for public recreation.

Federal policy during the past decade in regard to Indian reservations has been to withhold these lands from white settlement and to repurchase some lands formerly opened to homesteading, so that land will be available for the expanding Indian population.

The purpose of the Federal Land Utilization project was to retire submarginal cropland and operating units, and to readjust population in line with available resources. The lands acquired are now being used for grazing by local ranchers and farmers.

Practically all of the public domain, both within and outside of grazing districts, is either grazing or waste land. These lands were open to homesteading until 1934, but were not settled because they can be used successfully only in large blocks and not enough acreage could be acquired under the homestead laws to establish a ranch unit. Most of these lands have a low grazing capacity.

State school endowment lands are for sale in all States except Nebraska at minimum price of \$5 or \$10 an acre. These lands have been offered over a long period. Those remaining are generally grazing or cropland tracts that were not considered worth the minimum price; they are not all leased but are generally used by local operators. In most cases they must be combined with other land for economical operation. Nebraska has discontinued the sale of State school lands and in Kansas practically all of it has been sold.

The lands owned by the State credit agencies and counties are for sale, but they are mostly scattered fields and small tracts of grazing land. Much of this land has been leased and sold to local operators; it is one phase of the ownership adjustment that has taken place in the last few years. As most of this land is now in operating units, it offers little in the way of a net increase in settlement.

*Settlement opportunities through irrigation.*—Agricultural resources of the region can be increased through the development of irrigation. From the standpoint of national investment in the welfare of the Plains, it would appear to be sound policy to develop irrigation in such a way as to reduce public and private costs in time of drought. These costs are high. For example, it has been estimated that Federal expenditures alone in the 1930's were about equal to the cost of proposed developments. A large share of these expenditures were the result of drought.



A survey of irrigation proposals by the Bureau of Agricultural Economics<sup>13</sup> indicates that about 6,265,000 acres of new land has been proposed for irrigation in the Northern Plains States. About 4,176,000 acres of this is included in the proposed development of the Missouri River Basin and is partially authorized by Congress.<sup>14</sup> However, not all this acreage will be developed in the immediate postwar period. The BAE survey estimates that about 349,000 acres are now authorized or feasible for development and actual settlement in the first five years after the war. An additional 228,000 acres might be developed, but either information was not available to determine feasibility or the costs appeared to be excessive.

The Bureau of Reclamation has submitted a postwar program to Congress involving 2,207,000 acres in the Northern Plains.<sup>15</sup> The construction period for these developments range from 1 to 10 years, but the Bureau estimates that the construction could be completed for 1,854,000 acres in 5 years.

Taking the Bureau of Reclamation's program of construction as submitted to Congress and applying the farm development experience on 9 of the existing Reclamation projects in the region, the expected annual increase in irrigated land may be estimated. The experience on existing projects has been used to construct a curve showing the percentage of irrigable land that would be irrigated each year during the first 20 years of the development. Applying this percentage to the proposed postwar program, it is found that while construction would be completed on 1,825,000 acres by the fifth year, only 413,000 acres would be under irrigation. At the end of the tenth year, construction would be completed on 2,207,000 acres but 940,000, less than one-half, would be irrigated. Assuming no additional construction, 1,215,000 acres would be irrigated at the end of the fifteenth year. At the end of the twentieth year, 1,385,000 acres would be irrigated.

If these estimates are valid,<sup>16</sup> then 20 years after the start of the

<sup>13</sup> "A Study of Proposed Irrigation in the Ten Plains States," Bureau of Agricultural Economics, Lincoln, Nebraska, August 1944, unpublished.

<sup>14</sup> H. R. 4485, 78th Congress, 2d Session, December 4, 1944.

<sup>15</sup> Hearings before the Special Committee on Post-War Economic Policy and Planning, U. S. Senate, 78th Congress, S. Res. 102, Part 5 Reclamation, Irrigation and Power Projects, June 6, 1944. These figures are from a Proposed Program and only part of it has been authorized by Congress.

<sup>16</sup> The rate of development has been estimated from a smoothed curve based on 30 year records of existing projects. Curves developed from data on age of irrigation enterprises in the 1920 Census of Irrigation show a similar trend. See also Teele,

program less than two-thirds of the total land for which water would be available will actually be under irrigation. The slow rate is accounted for by farms and other land in the project areas that are not brought under irrigation for some time and by partial irrigation of other farms. Complete irrigation of all irrigable land is never reached. The implication of this rate of development to land settlement is obvious.

The BAE survey indicates that about 2,200 irrigated farms might be made available for settlement in the first 5 years after the war on projects under construction or authorized and in proposals that have been classified as feasible or with only minor limitations. About 16,600 additional farm settlement opportunities might subsequently be made available on this type of project over a long period (table 4).

TABLE 4. ESTIMATED NUMBER OF FARMS WHICH COULD BE MADE AVAILABLE FOR SETTLEMENT THROUGH DEVELOPMENT OF NEW IRRIGATED LAND, NORTHERN GREAT PLAINS

	Estimated time of settlement	
	First 5 years	Subsequent long-time development
	<i>Number of farms</i>	<i>Number of farms</i>
I. Projects under construction and authorized, plus feasible proposals and those with minor limitations to feasibility.	2,176	16,619
II. Proposals that lack sufficient data to determine feasibility.	813	16,813
III. Proposals that have major limitations to feasibility.	39	4,943

Source: Unpublished study by Bureau of Agricultural Economics.

A second group of irrigation proposals on which sufficient data were not available to determine feasibility would, if developed, make about 800 farm settlement opportunities in the immediate postwar, and more than 16,000 in subsequent years. Although these estimates indicate that the possibilities of irrigation development are rather large, only a relatively small number of new farms could thus be made available for settlement in the immediate postwar period.

Economics of Reclamation, Chapt. VII. Considerable progress has been made in techniques of land development in recent years, but much of the land proposed for irrigation is in private ownership and now used for dry farming and ranching; many of these operators may not want to irrigate. A program could be devised to speed up the conversion of existing dry farms to irrigation.

There will be considerable variation among States in the extent of future irrigation as well as in the settlement opportunities that may be provided. The irrigated acreage of the Northern Great Plains could be increased greatly, but since the southern and eastern areas are already closely settled, the opportunities for new settlers are fewer than in the less densely settled western and northern areas.

### *Conclusions*

Although it is impossible to predict accurately the agricultural future of any region such as the Northern Great Plains, the indications are that many of the shifts in farm population and number of farms are permanent changes. The agricultural adjustments in the Plains are not completed; additional impact may be expected from further mechanization and from shifts in demand for agricultural products. However, under a postwar situation of full employment and a high level of national income, these adjustments would be relatively painless.

Reemployment of demobilized manpower in the region will be a problem of considerable magnitude, but if suitable alternatives are available, the number seeking to enter or return to agriculture will probably not greatly exceed the number that left to enter the armed services. However, most of those who seek farm opportunities will apparently wish to become farm operators. As the number of opportunities to become farm operators in the region will be limited, they will come into competition with those now operating or working on farms.

Replacement of farm operators who are retiring from the farm labor force seems to offer the greatest number of opportunities. However, many farmers are retiring during the war and there will be competition for places vacated in the postwar period by the large proportion of young men who annually enter the labor force. Subdivision seems to offer little in the way of net opportunities. A small number of opportunities will be available on military land. The public land in the region offers little or no opportunity for establishing new farms and irrigation development will offer relatively little in the immediate postwar period, but it will result in a considerable increase in later years if the proposed projects are developed.

## LABOR PRODUCTIVITY IN AGRICULTURE IN USSR AND USA\*

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**A**N OFFICIAL Russian publication<sup>1</sup> used as a slogan the following statement:

"In agriculture instead of an ocean of individual farms with their feeble techniques and domination of the kulak we now have in the all-embracing system of the colchoses<sup>2</sup> and sovchoses<sup>3</sup> the most concentrated agriculture in the world, mechanized and equipped with modern techniques."

The claim of possessing the most concentrated agriculture in the world is correct with reference to crop production. In 1938 96 percent of the total sown acreage and practically all wild hay and pasture belonged to and was operated by 3961 sovchoses averaging 2091.2 hectares of total land and by 242,400 colchoses averaging 481.6 hectares. In USA, on the other hand, the 1940 census counted 6,094,799 farms; there still remain more than three million commercial farms after part-time, residential, and similar small enterprises are excluded from that figure.

The claim to the most mechanized agriculture in the world, frequently made in USSR,<sup>4</sup> though a gross exaggeration, is correct with reference to such important operations as plowing with the tractor and harvesting small grain with the combine. In 1938 71.5 percent of all spring plowing was performed by tractors in USSR;<sup>5</sup> USA falls short of this figure. 48.4 percent of the acreage in small grains was harvested with the combine in USSR in 1938; in USA 49 percent of the wheat acreage but only 10 percent of the oat acreage was so harvested in the same year.<sup>6</sup>

\* The findings presented here agree in substance with those of M. Kubanin ("The Level of Productivity of Labor in Agriculture in USSR and USA," *The Problems of Economics*, 1941, no. 1), whose study came to the attention of the present writer after he had finished this article. In the present article all quoted studies pertaining to USSR are in Russian; translated titles are used without putting them in square brackets.

<sup>1</sup> *Socialist Agriculture in USSR*, 1938, p. 10.

<sup>2</sup> The writer believes it unwise to spell "colchoses," the abbreviation for collective farm, with a "k," thus removing from it the direct connection with the word "collective."

<sup>3</sup> Abbreviation for "state farm."

<sup>4</sup> See, for example, N. Sacharov and N. Rudienko, "Demonstration of the Historical Achievements of the Colchoses System," *Socialist Agriculture*, August 1939, p. 24.

<sup>5</sup> *Socialist Agriculture in USSR*, 1938, p. 24.

<sup>6</sup> *Farm Wage Rate Index Down 3 Points from Year Ago*, U. S. Department Agriculture, Agriculture Harvesting Service, July 14, 1939, pp. 14-15.

The great concentration of enterprises and the mechanization easily leads one to believe that productivity per farm worker is high in USSR. Large farms commonly spend much less labor per unit of area or product than small farms; mechanization primarily aims at saving of labor. Yet, if one wants to find a productivity of farm labor similar to that in USSR, one has to look to such backward areas as the Danubian countries, excluding Hungary. USSR is greatly inferior as compared with such a country as Germany, although no one would speak of agriculture of this country as greatly mechanized. The difference is even greater in labor productivity between the agriculture of USSR and USA.

In 1938 the population of USA was little more than three-quarters of that of USSR, its farm population was only one-third and the labor force on farms less than one-quarter. The value of the net production of farm products, however, was about one and one-half times larger in USA than USSR. Consequently the productivity per person of farm population in USA was more than four times that in USSR; the difference was still substantially greater in the productivity per person engaged in farm work.

There are several reasons for this huge difference. Compared with agriculture of USA, Russian agriculture is much more poorly equipped with capital, and the available machinery, implements, and livestock are of poorer quality. Owing to the inadequate amount of machinery on farms, it has to be largely used at inappropriate times, when it is less effective. A tremendous amount of work is performed simply by hand. The smallness of the Russian farm horse, the low yield of milk and eggs per cow and hen, the slow maturing of hogs, and so on—all implies a large amount of labor per unit of product.

Another important factor contributing to the relatively low productivity per man in USSR is the Russian peasant's inferiority to the American farmer as a worker and, to an even greater degree, as a manager. The colchoso system makes the peasant also very unwilling to work and implies considerable additional input of labor for management, guards, and so on. Of relatively minor significance as far as the present huge difference in productivity of labor in USA and USSR is concerned, but in itself of lasting and very great importance, is the fact that Nature is much less generous to the agricultural producer in USSR than in USA.

*Output*

The difficulties and limitations encountered when comparing total farm production in two so widely differing countries as USSR and USA are realized, but it is hoped that the comparison is accurate enough for the very broad conclusions drawn from it.

As is shown in Table 1, USSR exceeds the USA in the output of only three major products, potatoes, sugar, and vegetables. Quantitatively the difference is large only in the case of potatoes; and qualitatively the vegetables of USA are much more valuable. Grain production, including potatoes in terms of grain, is about 15 percent larger in USA. Production of vegetable oil in USA exceeds that of USSR by almost one-third. About 60 percent more fibers are produced in USA, and cotton, the chief American product, is more valuable on a pound basis than hemp; in Russia cotton is also more valuable than flax. Fruit production in this country is about  $3\frac{1}{2}$  times that of USSR, and the value of the tobacco production is several times higher.

The portion of the crop production which composes part of the net farm output, i.e. that used for food and technical purposes rather than seed and feed, does not bulk as large in USA as compared with USSR as the gross production shown in Table 1, because a much larger proportion of grain is fed in USA than USSR. In fact, the quantity of grain used for food and technical purposes is somewhat smaller in USA than USSR. Several times as many potatoes are used for food and technical purposes in USSR than USA. The smaller USA production of grain, potatoes, and vegetables for food and technical purposes is probably about offset by the much larger fruit production, the larger production of vegetable fibers and vegetable oil, and the much higher value of the vegetables and tobacco in USA.

USA is much superior to USSR in the output of animal products. Three times as many eggs,  $2\frac{1}{2}$  times as much of the principal meats (beef, veal, pork, and lamb), almost four times as much poultry, and  $1\frac{1}{2}$  times more milk is produced in this country. After milk, meat, and eggs are converted to a uniform basis, the USA production of the major foodstuffs of animal origin appears at least double the USSR production. Hides and skins are produced in greater quantity and of better quality in USA than USSR.

In the total value of the net production of farm production in

TABLE 1. OUTPUT OF MAJOR FARM PRODUCTS IN USSR AND USA AROUND 1938\*

Product	Unit	USSR	USA
Grain	million tons	93 <sup>a</sup>	125
Vegetable oil	1000 tons	775 <sup>b</sup>	1000
Fibers			
Cotton	million bales	3.9 <sup>c</sup>	13
Flax	1000 tons	570 <sup>d</sup>	
Hemp	1000 tons	410 <sup>e</sup>	
Wool	1000 tons	146 <sup>f</sup>	185
Total	1000 tons	2100	3400
Sugar	1000 tons	2750 <sup>g</sup>	2400 <sup>h</sup>
Potatoes			
White	million tons	65 <sup>i</sup>	11
Sweet	million tons	—	2
Total	million tons	65	13
Vegetables	million tons	23.0 <sup>j</sup>	20 <sup>k</sup>
Fruits	million tons	325 <sup>l</sup>	11 <sup>k</sup>
Meat and lard	million tons	3.6 <sup>m</sup>	9.0
Poultry	million tons	0.33 <sup>m</sup>	1.2
Milk	million tons	32	52
Eggs	billions	12 <sup>n</sup>	37

\* Official data, with adjustments as stated in footnotes; for USSR from *Socialist Agriculture USSR in 1938*; *Socialistic Construction USSR, 1933-38*; *Statistical Handbook USSR, 1928*; *Acresages 1938 by Crops and Farm Types*; and other official publications, for USA from *Agricultural Statistics*, published by U. S. Dept. of Agriculture and other official sources. Most figures rounded.

<sup>a</sup> In USSR official crop statistics give yields and production in terms of the "biological" crop, which tend to be substantially higher than the actual or the so-called "barn" crop. Prolonged careful analysis leads to the conclusion that the normal barn yield of grain was about 8½ quintals per hectare around 1938. The grain acreage was 102.4 million hectares in 1938. The Russian term "grain" includes dry legumes; hence these are included also in the figure for USA.

<sup>b</sup> Computed from data on acresages, probable barn yields, and probable extractions of the various oilseeds.

<sup>c</sup> *Socialist Agriculture USSR in 1938*, p. 66.

<sup>d</sup> Acreage, 2.2 million hectares in 1938; estimated yield, 2.4 quintals per hectare. The preliminary figure for flax-fiber marketed by farmers in 1938/39 (*Socialist Agriculture USSR in 1938*, p. 89) was 370,000 metric tons.

<sup>e</sup> Acreage, 654,000 hectares in 1938; average yield, 5.7 quintals per hectares in 1925-29.

<sup>f</sup> Preliminary official figure for 1938-39, *Socialist Agriculture USSR in 1938*, p. 73.

<sup>g</sup> Official figure for 1938.

<sup>h</sup> Does not include sirups.

<sup>i</sup> Acreage of 1938 times an estimated barn crop of 8 metric tons per hectare.

<sup>j</sup> Average 1925/26 to 1927/28 from *Statistical Handbook USSR, 1928*, pp. 280-81. The total acreage in the two groups of vegetables, which are distinguished by the Russian statistics, was about the same in 1938 and 1928.

<sup>k</sup> Computed from *The National Food Situation*, U. S. Dept. of Agriculture, June 1944, with adjustments for unaccounted portions of the crops.

<sup>l</sup> Average 1925/26 to 1927/28 from *Statistical Handbook USSR, 1928*, pp. 280-81.

<sup>m</sup> Computed from the data on pp. 73 and 75 of *Socialist Agriculture of USSR in 1938*.

<sup>n</sup> The number of chickens as of spring 1938 was the same as that of chickens remaining on farms at the end of the winter 1927/28. The production figure for eggs of 10.8 billion in 1928 was increased to 12 billion to take care of improvements.

USA in 1938, the value of livestock products exceeded that of crops by 47 percent. Using these weights, we arrive at the conclusion that the net production of farm products in USA is more than one and a half times that in USSR. The result is moderately less favorable for USA, if the relative values of the vegetable and animal products in USSR are used as weights; in that country the value of the crops used for food and technical purposes was substantially higher than that of animal products in 1938.

Owing to limited markets and Government action, the prewar agricultural output of USA was considerably below the country's productive capacity. The agriculture of USA was able to increase its output by more than 25 percent from 1938 to 1944, although the supply of labor declined considerably and the supply of new machinery was greatly curtailed. The agriculture of USSR, however, was working full steam before the War, and hence during the War the output fell substantially even in the territory never occupied by the enemy. Thus the *productive capacity* of American agriculture was about twice that of Russian agriculture before the War.

### *Farm Population and Labor*

There were 30.5 million persons on American farms in 1938; the Russian population engaged on farms was around 90 million, i.e. about three times as large.<sup>7</sup> Since the value of the net agricultural production in USA was about one and a half times that in USSR, the output of farm products per person of farm population was more than 4 times larger in USA than in USSR before the War.

The average number of persons employed on American farms in 1938 is officially estimated at 10,740,000. In 1937 40,716,000 collective members were working for their colchoses.<sup>8</sup> The 2.5 million, employed by the sovchoses and by the machine-tractor stations, and some 2.6 million workers in individual peasant house-

<sup>7</sup> According to Varga, a competent observer (*The Journal of the Academy of Sciences of the USSR*, June 1939), the farm population amounted to about 58 percent of the total population at the beginning of 1939, when the latest population census was taken. Since the total was 170.5 million according to the census, the stated percentage indicated an agricultural population of 97.8 million. The term "agriculture" as used by Varga probably included forestry and fishing. Perhaps eight million people depended on these branches. This leaves about 90 million for the population depending on agriculture. The 1939 census counted a rural population of 114.6 million; this figure indicates a population depending on agriculture materially above 90 million.

<sup>8</sup> *Colchoses in the Second Stalin Five-Year Period*, Moscow and Leningrad, 1939, p. 35.



holds, brought the total of gainfully employed in USSR agriculture to 45.8 million.

The data for USA and USSR are not strictly comparable. While the American figure listed only persons employed strictly in agriculture, some collective members were employed in civic activities or in jobs of similar nature. Furthermore the American figure represented mostly full-time employment of adult men; for July 1, 1938, the figure of gainfully employed was estimated at 12,511,000. The Russian figure for the collective members, however, included every person, even if his or her work amounted to only a few days per year. Some workers on collective farms were used for work other than agriculture. Also, more than half of the workers on collective farms consisted of women; to a smaller extent children also were used. But there actually is a great difference in the participation of women and children in farm work in USA and USSR. While women do little farm work in USA in peace time, they contribute a great deal to it in USSR. In 1937, for example, on the investigated collective farms of 28 regions every woman aged 16 to 59 averaged more than 150 days of farm work per year,<sup>9</sup> and the average continued to increase in succeeding years.<sup>10</sup>

Thus the output of farm products per person gainfully employed in agriculture was perhaps five times as large in USA than USSR.

### *The Land*

The analysis of the reasons for the large difference in the productivity per man in USSR and USA is best started with a consideration of land resources. USA is much warmer than USSR. Only a small portion of Russian farm land lies south of 46.5°, the latitude of Odessa, but also of northern Maine. Only southern Russia is sufficiently warm for corn and the areas with sufficient warmth for cotton and peanuts are even more limited; that adequate for citrus fruit is negligible.

Moisture deficiency is another dominating factor in USSR. Rich, black soil stretches over most of southern European Russia and extends far and wide into Siberia. Part of this soil is deeper and richer than the corresponding soils in the western USA. But what of this,

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<sup>9</sup> *Productivity and Utilization of Labor in Colchoses in the Second 5-year Period*, Moscow and Leningrad, 1939, pp. 68 and 82.

<sup>10</sup> See I. Merinov "Labor Supplies of Colchoses," *Socialist Agriculture*, March 1941, p. 18.

if, as is the case in the western parts of the Dakotas, Nebraska, and Kansas as well as farther west, insufficient moisture makes it impossible to utilize that richness fully? The areas well supplied with moisture are on the whole greatly superior in soil productivity in USA to the corresponding areas of USSR (central and northern Russia) owing to the much greater amount of warmth and, partly, to better quality of the land. The tremendous asset which the USA possesses in the corn belt, where forty bushel-per-acre corn is obtained with little effort, cannot be overestimated. USSR has nothing comparable not only to the large corn belt with prairie soils but even to the small corn belt with merely forest soils. In the best adapted areas, corn averages only 16 bushels per acre in USSR, while the average yield for the whole USA, including the very unfavorable South, is  $23\frac{1}{2}$  bushels. Even the land of eastern and north-eastern USA is materially better than the land of central and northern USSR.

The natural land resources of USSR make an especially poor showing, if considered in relation to the population. Much grass land, which owing to insufficient precipitation is used in USA only for sheep grazing, is plowed in USSR, yielding very low returns and failing in three years out of every five. Likewise, a great deal of poor, cut-over forest land, which is not considered worth clearing here, is cultivated in USSR.

The great difference in the quality of the land is obvious from the fact that the much greater crop production of the USA is obtained from approximately the same harvested acreage of arable land as that of USSR; the total crop acreage, i.e. harvested arable land and wild hay is substantially smaller in USA. The greater generosity of Nature is the principal reason for this difference.

### *The Means of Production*

There was less than half a horsepower in animal draft power, tractors, trucks, combines, and stationary motors, per gainfully employed person on collective farms and machine tractor stations in 1937.<sup>11</sup> USA had three horsepower per person gainfully employed in agriculture in tractors and horses alone in 1939. Russia had only 153,800 combines in 1938 for its huge acreage harvested with this machine. It is noteworthy that binders, the standard harvesting machine for small grain in advanced countries are little

<sup>11</sup> Colchoses in the Second Stalin Five-Year Period, *op. cit.*, pp. 29 and 35.

used in USSR. So far as machinery other than the combine was used for harvesting small grain, it was largely the mower which does nothing but cut and has not been used for this purpose here for decades. While only 8.5 per cent of small grain was harvested by hand in 1938, almost half of it was *bound* by hand in that year after having been cut with a mower.

There is even less equipment for all other operations such as cultivating, haying, preparing silage and other kinds of feed, procuring water, sawing wood, and so on. Most of these operations indeed have to be performed entirely by hand. The Russian machinery is not up to date. For example, rubber tires, which became standard equipment of wheel tractors in this country several years ago, are not yet used in USSR. The Russian machinery is also not as well built and not as durable as the machinery in USA. The poorer and less up-to-date machinery is further impaired in its usefulness by poor repair facilities as well as by the use of machinery which here would be considered to have finished its useful life.

The quality of the livestock leaves even more to be desired than that of machinery in the USSR. The small horse predominates in USSR; and although it is very modest in its feed requirements, it works accordingly. The 64 percent higher milk production in USA is attained with practically the same number of cows as in USSR (23.3 million in USA and 22.7 million in USSR in 1938). A 30 percent larger number of cattle (65.2 million in USA and 50.9 million in USSR in 1938) produced more than twice as much beef and veal (3.95 million tons in USA and about 1.65 million tons in USSR) and of better quality at that.

Slightly less than a half as much fertilizer was used in USSR than USA in 1938.

### *The Man*

The Russian peasants, now mostly colchoses members, have had little, if any, schooling. They are making very little and their reward, moreover, is very uncertain.<sup>12</sup> Hence their living quarters are not much better than the accommodations of well-kept animals. The diet is among the worst in the world, consisting almost exclusively of bread, and even of this they rarely can afford to eat all they

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<sup>12</sup> The colchoses members get a share in the proceeds of their collective farms only after the obligatory delivery to the government has been made, the machine-tractor stations have been paid, and the funds for seed and feed have been set aside. In poor crop years little or nothing is left for distribution among colchoses members.

want. The unwillingness of the collective members to work for the very low and uncertain reward also undoubtedly bulks large among the factors which bring about the low productivity of labor. Such workers certainly are no match for the American farmer in all-round intelligence, ability to do continuous work without overstraining themselves, and especially in skill of handling machines. But, owing to the very low cost of labor of the colchoso members, there is also no reason to economize on it. Labor indeed is by far the cheapest factor of production of collective farms.

Pictures are frequently seen in magazines and other publications which show the gigantic progress in the mechanization of agriculture in USSR; harvesting with the combine is displayed most proudly, sometimes even with such huge aggregates as two 20-foot combines driven by one 60-horsepower crawler. A careful observer of these pictures will notice that there are two men on each tractor and four men or more on each combine. For several reasons, the six men on the tractor and combine in USSR do not do as much work as two men on the same outfit in USA. Yet tractor drivers and especially combine operators are the cream of what the USSR village can yield. These newly created village aristocrats are making 3 to 4 times as much as ordinary colchoso members;<sup>13</sup> they live better than most "kulaks" used to live and certainly are far superior to the average colchoso members in intelligence and ability to perform. The efficiency of the American farmers exceeds that of Russian colchoso members in most other operations, for example, in harvesting corn or milking cows, much more than in driving tractors or operating combines. Owing to the very low cost of labor, huge amounts of it are used for operations, which are uncommon not only in USA, but in most European countries as well, such as repeated hand-weeding of small grain or repeated hand picking of heads of small grain left in the field.

There is much in the system of collectivized farming besides the very low reward of colchoso members which operate toward inefficiency in general and labor inefficiency specifically, such as the separation of the ownership of the machinery from its users, the

<sup>13</sup> The workers of machine-tractor stations which are paid by the colchosos—these mostly consist of tractor drivers—averaged 3.8 "working days" (a unit in which the share of the members in the returns of their colchosos is computed) per day of work on the investigated collective farms in 1937, while all men from 16 to 60, except the tractor drivers, averaged 1.4 "working days" per day of work. In addition to the "working days" tractor drivers were given substantial special bonuses in products obtained from fields on which they worked.

collective farms; the excessive size of many machine-tractor stations; too large size of many colchoses; too much emphasis on the biggest sizes of tractors and combines; the use of the combine in areas and under conditions unadapted for this form of harvesting; the large number of operations which are not performed by the machine-tractor stations and also can not be done efficiently by the colchoses themselves, such as haying. The topic is too broad to be discussed here.

*Individual enterprises.*—Table 2 gives a comparison of the findings of investigations specifically undertaken by official agencies in USSR and USA to determine the labor input. In using the data it is necessary to consider that in the USA study the labor is mostly that of adult men, while in the USSR study the work of men, women, and, to a small extent, even children is involved. Milking of cows, for example, is definitely woman's work in USSR. On the other hand, only the immediate supervision such as that of the superintendent of the dairy branch is included in the analysis for USSR. The time spent for general management, bookkeeping, and so on, is not assessed to individual crops and livestock. Likewise unassessed is the time spent by the personnel of the machine-tractor stations. In USA, however, the farmer usually is his own manager, while bookkeeping, if done at all, is a spare-time occupation.

*Small grains.*—Three to four times more labor is spent per hectare of small grain in USSR than in USA, if the labor provided by the owners of the hired threshing machines is added to the figures shown in the table for USA. The lowest figure given in the USSR source is 2.7 days per acre of early spring grain in the Azov-Black Sea region. All but 4.1 percent of the plowing was done by tractors and 65.2 percent of the acreage was harvested with the combine in this region in 1937. For Nebraska, where all the wheat is fall-sown (fall-sown grain requires somewhat more work than spring-sown small grain) and only 51 percent of the wheat acreage was harvested with the combine, the USA source gave 5.7 hours of labor per acre of wheat. Almost as much (5.2 hours) was spent in the Azov-Black Sea region on hand weeding alone. Even more time (5.1 hours in Rostov oblast and 8.1 hours in Krasnodar oblast<sup>14</sup>) was used for "other harvesting work," of which hand picking of heads remaining in the fields probably constituted a large part.

<sup>14</sup> Data from p. 31 of the quoted study; only two oblasts were investigated in the Azov-Black Sea Region.

TABLE 2. LABOR INPUT ON SPECIFIED CROPS AND LIVESTOCK ON COLLECTIVE FARMS OF USSR AND ON AVERAGE FARMS OF USA IN DAYS\*  
(Per Acre; on Livestock Per Year)

Item	USSR	USA
Fall sown small grains	4.74	—
"Early" spring grains; i.e. wheat, barley, and oats	3.95	—
Millet	4.96	—
Wheat	—	0.87 <sup>a</sup>
Rye	—	0.99 <sup>a</sup>
Barley	—	0.96 <sup>a</sup>
Oats	—	0.90 <sup>a</sup>
Corn	6.26	—
Harvested from standing stalks	—	2.42
Cut, shocked, and husked	—	3.63
Cotton	33.10	9.10
Sugar beets	53.38	9.20
Potatoes, white	26.74	6.80
Cows	46.00	14.00
Milk, per 100 pounds	1.89	0.30
Heifers and young bullocks	24.00	—
Calves	23.00	—
Beef Cows	—	2.30
Adult Hogs	22.00	—
Young Hogs	17.00	—
Piglets	11.10	—
Hogs, per 100 pounds of live weight	—	0.39
Sheep	4.00	0.62 <sup>b</sup>
Lambs	3.00	—

\* The figures for USSR from *Productivity and Utilization of Labor in Colchoses in the Second Five-Year Period*, Central Office of Economic Statistics, Moscow and Leningrad, 1939. The figures for USA are from M. R. Cooper and others, *Labor Requirements for Crops and Livestock*, U. S. Department of Agriculture, Washington, 1943. The USA source gives the figures in hours; they are converted to a day basis by assuming 10 hours per day.

<sup>a</sup> The labor on threshing supplied by the owners of the stationary threshing machines not included.

<sup>b</sup> Includes care of lambs until weaning time.

**Corn**—An American reader will be particularly interested to know how in USSR they manage to spend  $6\frac{1}{2}$  days on an acre of corn yielding only 16 bushels,<sup>15</sup> or about 4 hours per bushel. For one thing, they are unable to keep their standing corn sufficiently clean by machinery alone; not less than 2.6 days per acre was spent for weeding and thinning the corn by hand. In 1937 77.6 percent of the corn was harvested by hand at an input of 1.7 days per acre or more than an hour per bushel. Women still pick the corn into aprons and carry it substantial distances. There is furthermore in the corn account an item "other work in harvesting"

Average yield in 1925/29.

with an average outlay of 1.3 days per acre; this probably includes harvesting of the stalks and repeated picking of cobs left in the field in the first picking. In the twenties corn was officially declared the solution of many Russian problems; a persistent country-wide propaganda brought an increase of the corn acreage from 2.5 million hectares in 1924-1925 to 4.5 million in 1928. Collectivization was accompanied by a decline of the corn acreage to only 2.6 million hectares in 1938.

*Cotton*—Cotton growing with its extremely small reward of labor is a sore spot in the American economy. But it does not make a poor showing as compared with the situation in USSR. The data for USSR in Table 2 pertains only to unirrigated cotton grown in southern European Russia.<sup>16</sup> The yields are low owing to low precipitation and generally unsuitable climatic conditions.<sup>17</sup> But the very fact of the low precipitation should tend to keep the labor input down. In spite of this the labor input on unirrigated cotton in USSR is almost 4 times larger than the average input in USA.

The comparisons of the input of labor on cotton on collective farms specifically with that on farms in the old South<sup>18</sup> shows that, no matter how cheap labor may be in the American South, it is spent even more lavishly, indeed wastefully, in the agriculture of USSR.<sup>19</sup>

*Animal products*—A milk maid on the average takes care of 6.7 cows, 1.6 heifers, and 1.7 calves in dairy branches of collective farms and she by no means does all the work these animals require; in addition there are shepherds, barn workers, superintendents of the specific branch, and so on. All these additional workers spent 17.7 days per cow and per year in addition to 28.3 days spent by the milk maid, with a total of 46 days. Since the yield of milk per cow was only 2500 pounds in 1937, more than six times more labor was used per 100 pounds of milk in USSR than USA.

<sup>16</sup> In six investigated colchoses of Central Asia, an average of 101 days was used per acre of irrigated cotton in 1939 as against 33 days on unirrigated cotton in 1937 as shown in Table 2. See N. Sapel'nikov, "Labor Productivity on Cotton Farms," *Socialist Agriculture*, Oct. 1940.

<sup>17</sup> The average yield on the investigated farms in 1937 was given at 775 kilograms of unginned cotton per hectare or 240 pounds of ginned cotton per acre. But this obviously is the "biological yield," the actual yield must have been much smaller. 1937, moreover, was a year with exceptionally high yields. The average yield is likely to be 120 pounds or little more.

<sup>18</sup> See, for example, A. D. McNair, *Labor Requirements of Arkansas Crops*, U. S. Dept. of Agriculture Bulletin 1181, Washington, 1924. p. 10.

<sup>19</sup> The Arkansas farms reported on by McNair, used per acre of cotton only about 30 percent of the labor spent on unirrigated cotton by the colchoses of USSR.

The figures on pork production are even more striking. There was one superintendent for each 23.6 hogs, 25.8 young hogs and 39.3 piglets on the investigated collective farms;<sup>20</sup> in some other countries a man would have taken care of all those hogs with no other help and would also have been available for other work. The total yearly input of labor in the colchoses was equivalent to 20.7 days per hog, 16.7 days per young hog (4 to 9 months old), and 11.2 days per piglet. These figures indicate the huge amount of perhaps 7 days per 100 pounds of hogs (live weight) as against 3.2 hours, the average for the American farms.

The American source (p. 128) gives an average of 1.7 hours per chicken and per year and 0.3 hours per chick raised for flock replacement and for meat (6 months). Hence a man fully occupied with chickens is able to handle some 1500 chickens with the necessary flock replacement. A special study of labor organization on chicken branches of collective farms in USSR<sup>21</sup> gives as the recommended norms of work 500 to 700 chickens per chicken woman and 1,000 chicks per chick woman, and these workers again are not expected to perform all the work on their charges. Among examples of well organized chicken branches of colchoses, the author cites a chicken branch of the colchoso "The Ray of Light," with 1400 chickens and 5,000 chicks. According to American norms, this poultry would require 3890 hours per year or little more than one full person. The particular branch in USSR had a personnel of 7: One superintendent, 2 chicken women, 3 chick women, and one guard; moreover, the author may have neglected to mention the work on the chickens of those not exclusively occupied in the branch. The second exemplary chicken branch of a colchoso described by the author had a personnel of 11 for 2765 chickens and around 5,000 chicks. The same author says "In conditions of the Moscow, Kalinin, and Tula oblasts where the chicken branches are commonly small (100 to 300 animals) only one worker is assigned to the branch. During the breeding period he is given an adolescent as an assistant." In USA many a college student takes care of as many chickens in his or her spare time. Since the chickens owned by the collective farms lay far fewer eggs than the average

<sup>20</sup> The figures were for pasture time; the total number cared for was lower during barn time.

<sup>21</sup> "Organization of Chicken Farms in Colchoses," *Socialistic Agriculture*, 1940, 8-9.



for USA, the labor input per 100 eggs is probably 10 times greater in USSR.

*Labor Productivity on State Farms.* The productivity of labor is also low on the Russian state farms as compared with the standards of USA and many other countries. Sovchoses devoted to sheep raising produced an average of 378 pounds of wool per all-year worker in 1937; correspondingly sovchoses devoted to hog breeding delivered to the state only 1562 pounds of hogs (live weight) per all-year worker.<sup>22</sup> According to American standards,<sup>23</sup> to produce this amount of hogs a total of one month of labor would be needed (61 hours directly on hogs and 180 hours to grow 5.5 acres of corn for their feed).

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<sup>22</sup> *Socialist Agriculture USSR in 1938*, p. 37. The figures in the text pertain to workers in the narrow sense, i.e., they do not include employees.

<sup>23</sup> Cooper and others, *op. cit.*

## INTERTERRITORIAL FREIGHT RATE DIFFERENCES IN RELATION TO THE REGIONALIZATION OF INDUSTRY

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IN THE United States, the rail freight rate structure is characterized by a very large number of rate differences, not consistent with cost differences, which exist as between classes, commodities, hauls, and areas. Most of these rate differences have been made by design, either by voluntary action of the carriers or by decisions of the regulatory agencies acting under the authority of the statutes and the guidance of the courts. A large number of these rate differentials have not been litigated and must be considered to be lawful until such time as they are found to be unlawful by the regulatory agencies. Numerous rate differences, however, have been attacked in the past and a significant proportion of them, after formal proceedings, have been found to be unlawful by the regulatory agencies. Lawful rates have then been prescribed, but the differences, though lessened, have not necessarily been eliminated. The bulk of the class rates of the United States and many of the commodity rates have been reviewed or determined by the Interstate Commerce Commission in various proceedings.

Rate-making processes have not given universal satisfaction, as there is no formula by which the correctness of rate differences may readily be determined. The interterritorial freight rate differences, towards which attention is directed in this paper, have caused great controversy, probably more than any other type of rate difference.<sup>1</sup> The southern Governors, the Tennessee Valley Authority, and certain industrial groups in the South and the Southwest have taken a leading part in agitating the question. The southern Governors have already carried the case to the Interstate Commerce Commission and have secured rate adjustments on perhaps a score of manufactured products which are shipped northward in competition with similar products produced in the East.<sup>2</sup> The Tennessee

<sup>1</sup> For the purposes of this paper, the term "rate differences" seems preferable to "rate discriminations," the latter conveying the meaning of unjust or undue discriminations to the minds of many persons. By using "differences," the author hopes to avoid giving the impression that rate differences which do not conform to cost differences are necessarily unethical or illegal.

<sup>2</sup> 235 I.C.C. 255 and 237 I.C.C. 515.

Valley Authority has published three reports on the subject of interterritorial rates since 1937.<sup>3</sup> The Board of Investigation and Research, a temporary agency created under the provisions of the Transportation Act of 1940, has also published a comprehensive report on interterritorial freight rate differences.<sup>4</sup> The Interstate Commerce Commission is presently engaged in an investigation of freight classifications throughout the country and of class rates in the area east of the Rocky Mountains.<sup>5</sup> These proceedings were initiated by the Commission upon its own motion in 1939.

The major issue today in the interterritorial freight-rate controversy is whether the freight classifications shall be made uniform and the class-rate scales equalized or more nearly equalized, distance considered, than they are at the present time. The industrial shippers, actual or potential, and their supporters in the higher-rated territories outside the East generally favor equalization; the industrial shippers in the East and the railroads throughout the country are opposed to such an adjustment. The western and southern proponents of equalization complain that they are discriminated against in their efforts to develop manufacturing enterprises because of difficulties in selling in eastern markets in competition with eastern manufacturers who have the advantage of lower freight rates. Western and southern railroads admit that class rates in their territories are higher than those in the East, but claim that their rate structures, though different than that in the East, have been developed through long experience to meet their peculiar traffic needs and should not be disturbed. The carriers assert that any general reduction in class rates applicable to manufactured products would reduce their earnings and the losses might have to be made up by increases in the rates, which they claim are low, on their primary commodities, such as agricultural products, lumber, coal, and the like.

Farm groups have been in some doubt as to the position they should take in the controversy. As buyers of manufactured prod-

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<sup>3</sup> See Tennessee Valley Authority, *The Interterritorial Freight Rate Problem of the United States*, House Document No. 264, 75th Cong., 1st sess., 1937; also by the same agency, *Supplemental Phases of the Interterritorial Freight Rate Problem of the United States*, House Document No. 271, 76th Cong., 1st sess., 1939, and *Regionalized Freight Rates: Barrier to National Productiveness*, House Document No. 137, 78th Cong., 1st sess., 1943.

<sup>4</sup> Board of Investigation and Research, *Report on Interterritorial Freight Rates*, House Document No. 303, 78th Cong., 1st sess., 1943.

<sup>5</sup> I.C.C. Dockets Nos. 28300 and 28310.

ucts for living and production, they can see the advantages of lower freight rates. Also, they welcome the development of local enterprises, with the accompanying increase of purchasing power in the hands of employees, as an outlet for their products and surplus farm labor. But they are concerned about the railroad claim that lower class rates may make it necessary to raise commodity rates, which govern the movement of most southern and western agricultural traffic.

In the discussion which follows, the purpose is to clarify the issues, to present the ascertainable facts about interterritorial rate differences, to trace the effects of such rate differences on regionalization of industry, and to evaluate the various methods proposed for the elimination or reduction of interterritorial rate differences.

### *Intraterritorial Class Rates*

The rate structure of this country has not developed into a complete, unified system, functioning for national purposes in an economic sense; it is characterized rather by regionalization, especially in class rates, even though science and engineering long ago overcame the physical barriers that originally prevented an integration and unification of railroad service. The Interstate Commerce Commission in the last decade or two has taken steps to place the rates that grew up in a topsy-turvy manner on a more consistent basis, but, although rates are made with greater regard for distance than they used to be, many inconsistencies remain.

At the present time, the major class-rate territories of the United States are Official or Eastern; Southern; Western Trunk-Line; Southwestern; and Mountain-Pacific. (See Chart 1.) Official Territory is divided into three main sub-territories, including New England, Trunk-Line (roughly the area between the Buffalo-Pittsburgh line and New England), and Central Freight Association (the area west of Trunk-Line Territory). Western Trunk-Line Territory is divided into four zones, with a rising level of rates from east to west. The railroads in Eastern, Southern, and Western (Western Trunk-Line, Southwestern and Mountain-Pacific) territories have formed themselves into groups and have developed different policies with respect to the system of charges to be levied against the movement of freight in their respective territories. Instead of having, therefore, a unified freight-rate structure to correspond with integrated service, the Nation has a composite of

[illegible][illegible]

territorial structures which often do not fit together properly, largely because of marked territorial differences in both the level and construction of the rates.

First-class rate scales now occupy a basic position in each of the several intraterritorial freight-rate structures.<sup>6</sup> All other class-rate scales are specifically related to the first-class scales by percentages. For example, fifth-class rates are 45 percent of first-class rates in Southern Territory. There is also some tendency in the making of commodity-rate scales to relate them to first class by fixed percentages (sometimes called column rates). This practice serves to augment the importance of first-class rates, since so many other rate scales are directly related to them.

Standard class rates move about 4.1 percent of the carload traffic of the country, according to an analysis made by the staff of the Interstate Commerce Commission of the carload traffic originating on all railroads on September 23, 1942. This class-rate traffic yielded about 6.3 percent of the revenues from carload shipments on that date. With the addition of carloads shipped on exceptions to classification to class-rate traffic, the rates moved about 14.8 percent of the carloads and returned approximately 22.4 percent of the carload revenue on September 23, 1942. The remaining 85.2 percent of the carloads and 77.6 percent of the carload revenue represented commodity-rate traffic.<sup>7</sup> Carload tonnage in 1939 was about 98.3 percent of total rail tonnage, including less-than-carload shipments. If it is assumed that all less-than-carload tonnage moves on class rates, which overstates the amount, and that the small sample is typical of the annual shipments, class rates normally account for about 3.6 percent of the rail tonnage originating and 11.4 percent of the freight revenues. The proportion of

<sup>6</sup> Class rates are rates subject to the rating provisions of the controlling freight classification. Classification ratings are the symbols which designate the class to which an article is assigned for the purpose of applying class rates. The major freight classification territories in the United States are: Official, comprising roughly the area north of the Ohio and Potomac Rivers and east of Lake Michigan and a line drawn between Chicago and St. Louis; Southern, the area south of Official Classification Territory and east of the Mississippi River; and Western, the remaining area of the United States. These three classifications are published in a single volume called Consolidated Freight Classification, which also contains rules and regulations governing freight transportation service. Class rates may be contrasted with commodity rates, which apply in case a commodity rather than a class is specified. In effect, this practice takes the commodity out of the classification to the extent that the commodity rate applies.

<sup>7</sup> See Exhibit 228 in I.C.C. Docket No. 28300.

traffic involved in the controversy over interterritorial class rates is thus seen to be small.

### *Intraterritorial Class-Rate Levels*

Class rates exhibit six significant differences as between territories. One difference is in the number of regular or standard classes. There are 7 classes in Official, 12 in Southern, and 10 in Western Territory. Another difference is in the classification ratings on commodities. An article may be rated first class in one territory and second class in another, etc. There are also differences between territories in the number and importance of the exceptions to classification rules and ratings.<sup>8</sup> The levels of the first-class scales vary from territory to territory, and in some instances the percentage relationships of lower classes to first class are not uniform as between territories. Finally, different rates of progression of scales are employed in the various territories as distance increases. These complications make it difficult to compute wholly satisfactory indexes of class-rate levels.

Index numbers of the levels of first-class rates and all class rates, including classification and exceptions' ratings, are presented in Table 1. While the indexes of all class rates in the various terri-

TABLE 1. INDEX NUMBERS OF LEVELS OF FIRST-CLASS RATES AND OF ALL CLASS RATES, TAKING INTO CONSIDERATION CLASSIFICATION AND EXCEPTIONS' RATINGS, IN THE VARIOUS RATE TERRITORIES OF THE UNITED STATES  
(Official Territory = 100)

Territory	First-class rates	All class rates
Official or Eastern	100	100
Southern	139	133
Western Trunk-Line, Zone I	123	127
Western Trunk-Line, Zone II	146	145
Western Trunk-Line, Zone III	161	160
Western Trunk-Line, Zone IV	184	183
Southwestern	161	153

Source: Board of Investigation and Research. *Report on Interterritorial Freight Rates*, 1943, p. 56.

territories are somewhat lower than first-class rates as related to the Eastern or Official level, it is clear that the levels of class rates, however measured, are much higher in all other territories than in

<sup>8</sup> "Exceptions" are used to modify the rules of the Consolidated Freight Classification and the ratings of the three major freight classifications. Exceptions' ratings are published in tariffs, generally for the purpose of lowering rates or liberalizing the rules which govern the movement of traffic.

Official. The least difference is in Western Trunk-Line Territory, Zone I, where the rates are 27 percent higher than those in Official. Southern rates are 33 percent higher than Official rates; Western Trunk-Line, Zone II, rates are 45 percent higher; Southwestern rates are 53 percent higher; Western Trunk-Line, Zone III, rates are 60 percent higher; and Western Trunk-Line, Zone IV, rates are 83 percent higher. No index is shown for the rates in Mountain-Pacific Territory because of lack of a consistent class-rate structure in that territory.

### *Intraterritorial Commodity-Rate Levels*

It is practically impossible to determine average commodity-rate levels, either within territories or between territories. Some commodity rates are directly related to class rates by percentage relationships to first-class or other class rates, and are known as "column" rates. Other commodity rates, while not related to class rates, are built upon some consistent basis, such as a distance scale. Still other commodity rates are constructed on a point-to-point basis, and are designed to fit the needs of individual shippers or communities, or to meet a competitive situation. Commodity rates are usually associated with higher minimum carload weights than those associated with classification or exceptions' ratings. Commodity rates are special rates which apply on a designated commodity or group of commodities. They are lower than the class rates they supersede, and some commodity rates are lower than the lowest of class rates. Competition plays a larger role in determining commodity than class rates.

Regional differences in commodity-rate levels may be compared on particular commodities. Studies made by the Board of Investigation and Research show that, on many important commodities, the rates are higher in the South and West than in Official Territory. Examples are salt, plaster, plasterboard, livestock, packing-house products, cotton textiles, and cement. On some commodities, however, including brick and clay products, fertilizer and fertilizer materials, lime, logs, pulpwood, and scrap iron, the Board found the rate levels to be lower in the South or West, chiefly in the South, than in Official Territory. On coke and sugar, the rates in Official and Southern territories are approximately equal.<sup>9</sup> The Board con-

<sup>9</sup> Board of Investigation and Research, *Report on Interterritorial Freight Rates*, 1943, Chapter IV.



cluded that commodity rates in the South and West, while probably higher on the average than in Official Territory, show less discrepancy than the respective class rates in the same territories. The Board did not, however, undertake to compute index numbers of these regional commodity-rate levels.

### *Intraterritorial Average Rate Levels*

If possible, the average levels of regional rates, including class and commodity rates, should be determined for comparative purposes. The measure of average rates most often employed, *viz.*, average revenue per ton-mile, is rather unsatisfactory because it fails to allow for variations in the composition of traffic and in the average length of hauls that may exist from area to area. In this country, rates are usually less per mile for long hauls than for short hauls, sometimes much less as when the rates are blanketed or grouped as to points of origin or destination over wide areas. It is necessary to state the average length of haul when making rate comparisons on the basis of average revenue per ton-mile; even when this is done, it is difficult to make proper allowance for the differences in average hauls.

Average revenues per ton-mile for the principal regions or districts are shown in Table 2. Taken at their face value, the data indi-

TABLE 2. AVERAGE REVENUE PER TON-MILE, CLASS I LINE HAUL  
RAILROADS, BY REGIONS OR DISTRICTS, 1939

District or Region	Average revenue per ton-mile (mills)	Index, Eastern = 100
Eastern District	10.07	100.0
Pocahontas Region	6.42	63.8
Southern Region	10.01	99.4
Western District	10.21	101.4

Source: Interstate Commerce Commission, *Statistics of Railways in the United States*, 1939.

cate that the average level of rates in the Southern Region is slightly below the level in the Eastern District and only a little higher in the Western District than in the Eastern District. The sole important departure from the Eastern level occurs in the Pocahontas Region, where the average rates are low because of the preponderance of bituminous coal in the traffic. As for Southern and Western territories, the indexes do not square with the known

facts about class rates, or even commodity rates. It is necessary, therefore, to subject the average revenue data to further treatment if they are to be useful as a measure of rate levels. It is known that the average haul is longer in the South than in the East, and longer in the West than in the South. The Bureau of Transport Economics and Statistics of the Interstate Commerce Commission estimates that the average haul per shipment in 1939 was as follows: Eastern, 252 miles; Southern, 282 miles; and Western, 345 miles. As the average revenue per ton-mile was found to be about the same in all areas except Pocahontas, it follows that if the data were corrected for differences in average haul, the indexes would show the average rate levels in the South and West to be higher than those in the East.

In an effort to adjust the figures for differences in average haul, Dr. Ford K. Edwards of the Bureau of Transport Economics and Statistics has developed index numbers of "average revenue levels." These indexes show Southern rates to be 5.5 percent higher than Eastern, and Western rates 16.6 percent higher than Eastern. (See Table 3, and footnote for an explanation of Dr. Edwards' methods.) While these indexes are rough approximations, they suggest that the regional differences in average rate levels are much less marked than the regional differences in class rates. They also indicate that the higher commodity rates on many articles in the South and West than in the East are partly offset by lower commodity rates on other traffic.

### *Levels of Interterritorial Rates*

Interterritorial rates are those governing shipments between points in different rate territories. As the class-rate levels vary from one territory to another, it is necessary to blend the levels in making interterritorial rates. Generally, the interterritorial rate level is intermediate between the levels of any two territories, but in some instances, especially where the hauls are long in the higher-rated territory, the interterritorial level equals or even exceeds the rates in the higher-rated territory.<sup>10</sup> In most cases the levels of interterritorial class rates lie closer to those of the higher-rated territory than those of Official Territory. Much controversy arises out of the difficulty of properly blending the various intraterritorial rate levels.

<sup>10</sup> *Ibid.*, Figure 14 facing p. 166.

TABLE 3. INDEX NUMBERS OF "AVERAGE REVENUE LEVELS" OF RAIL FREIGHT RATES IN THE PRINCIPAL TERRITORIES, 1939\*  
(Eastern District = 100)

District or Region	Index
Eastern District	100.0
Southern Region	105.5
Western District	116.6

\* The average length of hauls in the various districts and regions are estimated to be as follows: Eastern District, 252 miles; Southern Region, 282 miles; and Western District, 345 miles. (See I.C.C., Bureau of Transport Economics and Statistics, Docket No. 28300, Exhibit No. 195, p. 13.) The crude average revenue per ton-mile tends to understate the level of rates in Southern and Western territories with their longer average hauls as compared with Eastern, for the reason that rates do not increase in proportion to distance. In order to correct for the differences in average length of hauls as between the territories, Dr. Ford K. Edwards, of the Bureau of Transport Economics and Statistics, has compared actual freight revenues received in 1939 by the railroads in the Southern Region and Western District with the revenues they would have received if the Eastern level of rates had prevailed in the South and West. The procedure was to estimate the revenues per ton-mile for each of the commodity groups used by the I.C.C. for compiling traffic statistics, in each of the three areas, and also to estimate the average hauls. The Eastern revenue per ton-mile was then adjusted for each commodity group to what it would have been if the average hauls had been the same as prevailed in the Southern Region and Western District for that commodity group. (The adjustment of the Eastern revenues per ton-mile to Southern and Western average hauls was made by increasing or reducing the Eastern revenue per ton-mile according to the ratio that the revenue-per-ton-mile yield of the Eastern first-class rates for the Eastern average haul bears to the revenue-per-ton-mile yield under the same scale for the Southern or Western average haul.) This process was, therefore, designed to apply the Eastern rate level to the Southern and Western average hauls. From these hypothetical revenues per ton-mile the "constructive revenues" were computed, i.e., the total revenues which the Southern and Western railroads would have received from each commodity group by using the Eastern rate level. The ratios of the actual revenues to the constructive revenues were then computed, and these became a measure of the "average revenue levels," with the Eastern level as 100.

Dr. Edwards has stated that the actual revenues, which are compared with the constructive revenues in his calculations, are overstated by a small amount because the revenue data used are gross revenues before deductions for pick-up and delivery allowances, switching absorptions, etc. Dr. Edwards believes that the overstatement is greater in the Southern Region than in the other territories, and concludes that the average rate level in the South is between 3 and 5 percent, instead of 5.5 percent, higher than the Eastern level.

Sources: I.C.C., Bureau of Transport Economics and Statistics, "Unit Costs for the Eastern Territory," etc., Exhibit No. 195, Docket No. 28300, pp. 10-16. Also Board of Investigation and Research, *Report on Interterritorial Freight Rates, 1943*, pp. 151-153.

There is no completely satisfactory way of measuring the levels of interterritorial class rates. However, rough approximations have been computed for distances ranging from 200 to 1500 miles, as shown in Table 4. The rates from Southern to Official Territory are 35 percent higher than within Official. Western Trunk-Line to Official rates are 37 percent higher, and Southwestern to Official rates are 49 percent higher.

TABLE 4. INDEX NUMBERS OF LEVELS OF FIRST-CLASS RATES WITHIN OFFICIAL TERRITORY AND TO OFFICIAL TERRITORY FROM CANADIAN, SOUTHERN, SOUTHWESTERN, AND WESTERN TRUNK-LINE TERRITORIES, BASED UPON HAULS RANGING FROM 200 TO 1500 MILES, 1939  
(Official average rates = 100)

Territory	Index <sup>a</sup>
Within Official	100
Canadian to Official	110
Southern to Official	135
Western Trunk-Line to Official	137
Southwestern to Official	149

<sup>a</sup> Unweighted average rates.

Source: Tennessee Valley Authority, *Supplemental Phases of the Interterritorial Freight Rate Problem of the United States*, 1939, p. 7.

Interterritorial commodity rates, like intraterritorial commodity rates, are made on so many bases that it is virtually impossible to discern any consistent relationship between regional and interterritorial levels. For this reason, no attempt has been made to compute index numbers of interterritorial commodity rates.

### *Regional Levels of Average Rail Costs*

Territorial differences in average rates are frequently justified on the ground that transportation costs are higher in the higher-rated than in the lower-rated territories. This contention seems to be invalid on the basis of official data on cost made public in recent years. According to a series of studies carried on by staff members of the Interstate Commerce Commission for the years 1928, 1933, 1936, and 1939, there is relatively little variation in average unit costs as between the several rate territories.<sup>11</sup> Two important exceptions are New England, where average unit costs are high, and Pocahontas where such costs are low. Costs are probably a little lower in Southern Territory than in the East, and perhaps six to nine percent higher, on the average, in the West than in the east. On boxcar traffic, which includes most of the class-rate traffic, the average unit costs line up in about the same way as on all carload traffic.<sup>12</sup> As a matter of fact, the differences in unit costs as between

<sup>11</sup> See Interstate Commerce Commission, "Territorial Variation in the Cost of Carload Freight Service on Class I Steam Railways in the United States for the Calendar Year 1936," Statement 3812, March 1938; "Territorial Unit Costs for Railroad Freight Service 1939," Exhibit 13, filed in Docket No. 28300, by Dr. Ford K. Edwards, September 1942; and "Rail Freight Service Costs in the Various Rate Territories of the United States," Senate Document No. 63, 78th Cong., 1st sess., June 8, 1943. See also Board of Investigation and Research, *Report on Interterritorial Freight Rates*, 1943, Chapter IX.

<sup>12</sup> See working papers used in computing the territorial cost comparisons appear-

individual railroads are far more pronounced than are the differences in average unit costs between areas.<sup>13</sup>

Regional differences in average unit costs are small as compared with the differences in average rates, especially class rates. Also, the costs do not always vary directly with the rates. It is evident that the differences in unit costs between individual railroads in a given region, which are largely disregarded in making territorial rates, are greater than the differences in average unit costs for groups in the several regions.

Many factors affect unit costs, including wages, materials costs, traffic density, composition of the traffic, terminal congestion, and character of the terrain. Until recently it was thought that the relatively high traffic density (measured by ton-miles per mile of road or track per year) in the East as compared with the South and West gave the former a cost advantage. It is true that the East does have a denser traffic than the South and West.<sup>14</sup> However, the advantage of high traffic density in the East is offset by other factors, among which high terminal costs due to congestion, lack of coordination, and high land values are probably most important.

### *Regional Distribution of Economic Activity*

Economic activity in the United States is concentrated in the eastern part of the country, as shown by the reports of the United States Bureau of the Census. Official Territory, comprising about one-sixth of the land area of the country, contained slightly more than 50 percent of the total population in 1939.<sup>15</sup> In that year, the area had about 70 percent of the wage earners engaged in manufacturing, and produced about 69 percent of the dollar volume of the Nation's manufactures and 73 percent of the value added by manufacture. It received about 61 percent of the country's income, produced 58 percent of the combined value of raw materials and finished products, and shipped 60 percent of the total railroad tonnage. Official Territory obtained the bulk of its raw materials

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ing in the prepared statement of Dr. Ford K. Edwards, dated February 1943, circulated by the Interstate Commerce Commission. See also Board of Investigation and Research, *Report on Interterritorial Freight Rates*, 1943, p. 260.

<sup>13</sup> Board of Investigation and Research, *Op. Cit.*, pp. 277-278.

<sup>14</sup> Interstate Commerce Commission, *Statistics of Railways in the United States*, 1939.

<sup>15</sup> U. S. Department of Commerce, Bureau of the Census, and *Survey of Current Business*, August 1941.

from its own region; although reliable figures are not available, this territory probably obtained 85 percent of its minerals, 50 percent of its agricultural products, and 35 percent of its forest products from its own sources. It consumed perhaps 90 percent of its own manufactures, not counting exports to foreign countries. Clearly, the eastern area is the most productive and prosperous part of the country, if broad regions are compared.

It appears that the relatively unfavorable economic position of the South and West is not caused, as is claimed in some quarters, by the exploitation of their raw material resources by the East for the purpose of making large profits by producing manufactured products and sending a portion back to the outlying areas. This is true even though the South and West ship more than one-third of their raw material tonnage to the East for manufacturing and receive about one-third of their finished products from eastern points. These tonnages are small as compared with those produced and consumed within Official Territory.<sup>16</sup> The Board of Investigation and Research concluded after extensive study that "industry in the East is not overdeveloped, but that manufacturing in the South and West is underdeveloped. . . . The South and the West produce too little, both of raw materials and finished products. . . . The remedy is to increase manufacturing production in the South and West."<sup>17</sup> The Board said that growth in southern and western productivity will not harm the East, but, on the contrary, that it will increase the national income and prosperity of the country as a whole.

While Official Territory occupies a commanding position in regional economic activity, it lost ground relatively to certain other sections during the two decades between 1919 and 1939. According to the Census of Manufactures, the fastest growing manufacturing region during that period was the South. Significant increases were also registered by the Pacific and Southwestern areas. The greatest decline occurred in New England, followed by Western Trunk-Line Territory. While the Intermountain Territory in the West suffered a heavy loss in the number of manufacturing wage earners between 1919 and 1939, it held its own in the value of products and the value added by manufacturing.

<sup>16</sup> Board of Investigation and Research, *Preliminary Report on the Relative Economy and Fitness of the Carriers*, House Document No. 595, 78th Cong., 2d sess., 1944, pp. 8-9.

<sup>17</sup> *Ibid.*, p. 9.

*Effect of Rate Differences Upon Regional Economic Development*

Eastern Territory undoubtedly has many economic advantages over other sections of the country, including rate advantages. It has had the advantage of an early start, a large group of skilled, free workers, abundant resources, a populous market, and excellent transportation facilities. Eastern freight rates have been more uniform as to level and lower on the average than those in the South and West; southern and western railroads have been more interested in transporting raw materials produced in volume in their regions than eastern carriers, and southern and western rates have been more influenced by water and market competition than those in the East.

Regional differences in rail class-rate levels as well as construction of interterritorial class rates on a basis which is generally a blending of the intraterritorial levels, undoubtedly create difficulties for the manufacturers and dealers in the higher-rated areas. Regional differences in commodity rates may also create similar difficulties. Even if the extent of the market area available to producers is not absolutely restricted by the higher rates, they may be subject to economic disabilities because of the necessity of absorbing all or a portion of the rate differences in order to compete in the market area. Manufacturers in higher-rated territories may also be faced with higher production costs than their competitors in lower-rated areas to the extent that they depend upon raw materials drawn from the lower-rated territory on which they must pay higher interterritorial rates than their competitors. Manufacturers in higher-rated territories, therefore, may be faced with a two-fold disadvantage, first, because of high rates on raw materials drawn from other rate territories, and, second, because of high rates on the products shipped into lower-rated territories. Dealers face similar difficulties when competing for markets with other dealers located in the lower-rated areas.

These rate disadvantages, while restricting the market areas of the higher rated producers, should not be regarded as indefensible to the extent that the differences in rate levels are justified by differences in transportation costs and conditions. Producers may also be willing to establish plants in regions having higher freight rates in order to take advantage of other conditions which make for low costs of production, such as lower wages, low fuel or power costs, or nearness to raw materials. In such cases, the higher rates

may be borne by the producers in the higher-rated territory, but this fact does not necessarily justify the maintenance of average rate differences greater than the differences in transportation costs and conditions as between territories.

Without impugning motives, it is to be expected that individual railroads and groups of railroads in any given region will make freight rates favorable to the shippers they serve as a means of expanding or holding their traffic. Also, established economic interests in an area are in a position to make their desires known to the railroads, and usually can exert pressure to obtain favorable rate adjustments. The comparatively low level of rates on manufactured goods in Official Territory may be explained in part in terms of the desire of the northern railroads to preserve and protect the industries located in that area.

Why, then, have the southern and western railroads not likewise put into effect lower class rates in order to stimulate the growth of manufacturing in their respective areas? The question is pertinent because the railroads in those areas claim to be solicitous over the welfare of their shippers, actual or potential. Part of the answer to the question of high class rates on manufactures in the South and West is to be found in the lack of manufacturing there, which in turn has grown out of the interest of producers in low commodity rates on raw materials which they desire to sell in southern and eastern markets and in foreign countries. In order to establish these low rates, the southern and western carriers have felt obliged to maintain relatively high class rates on the rest of the traffic. Part of the answer derives from the long-standing quarrel between the southern and eastern roads over the division of lower joint rates between rate territories. And part of the difficulty arises from the reluctance of the eastern carriers to join southern and western carriers in publishing lower joint through rates from southern and western producing points to eastern markets than are presently in effect.

The obvious result of this rate situation is a tendency to perpetuate whatever particular regional specialization may exist in an area. Newer economic interests, such as manufacturers in the South and West, must frequently make their way against established rate adjustments which are a handicap to them.

Placing class-rate relationships on a more uniform basis throughout the United States would have an effect upon the location of



some industries or the volume of output in various areas, but determination of the extent to which particular industries in specified communities would be affected would necessitate a careful study of the importance of the rate relationships upon the operation of the industries in question. On the whole, it seems safe to say that territorial differences in class rates have had a limited but real effect upon the locational pattern of the industries of the country. Equalization of class rates, distance considered, while not likely to cause a revolutionary shift in manufacturing, other conditions remaining unchanged, would doubtless stimulate greater industrialization of the South and West. Such equalization might, however, have important adverse effects upon some individual railroads dependent upon class-rate traffic for a significant portion of their revenues and upon some industrial or commercial enterprises located in the East.

It is not proper to conclude, as some have done, that nothing should be done about territorial class rate differences merely because they have not had prime influence in determining regional specialization of manufacturing, or because some established economic interests would suffer from a change in the rates. If such rate differences have had indefensible adverse effects, and it is obvious that the South and West have suffered a degree of unwarranted disadvantage in the class-rate structure, the shippers in those areas are entitled to receive the aid of Government in obtaining remedial action.

#### *Alternative Methods of Securing Greater Uniformity in Class Rates*

If it is agreed that existing regional differences in class rates are in need of adjustment, the remaining task is to analyze the alternative methods that might be adopted to secure a greater degree of uniformity in such rates.

First, interterritorial freight rates might be made more uniform through individual rate proceedings before the Commission. Although this method of rate adjustment has been used for a long time, it has serious limitations for the purpose of securing greater equality in class rates. The necessary data relating to rates, costs, and commercial conditions are generally not available, under a piecemeal process, to small or inexperienced shippers most in need of rate adjustments. Such proceedings may also be unduly burdensome to shippers, whether large or small, whose interests are di-

rectly at stake. Above all, the broader aspects of the public interest may be inadequately represented in such cases.

A second possible method would be to establish a definite rule that all interterritorial freight rates shall not exceed, distance considered, the level of rates in effect in the destination territory. Termed the "destination-level" basis of rate-making, this method would undoubtedly compel a considerable increase in the use of distance scales in rate-making. The current practice of grouping or blanketing rates would probably have to be given up on most interterritorial shipments. This rule would also result in the establishment of different rates over the same line or route for equal hauls in reverse directions. At the present time, the class rates between identical points in any two territories are generally the same in opposite directions on traffic uniformly classified. This arrangement would have to be abandoned if the rates were set on a destination-level basis. The rates from the higher-rated to the lower-rated territory would be lower for hauls between any given pair of origins and destinations than the rates from the lower-rated to the higher-rated territory. In cases where the portion of the haul was relatively short in the lower-rated territory, many instances of long-and-short haul discrimination would unquestionably be created on shipments from the higher-rated to the lower-rated territory; the rates on the entire haul would be on the basis of the rates in effect in the lower-rated territory, while a shorter haul in the higher-rated territory would be on the high-rate basis. The destination-level basis would create difficulties for sellers in the lower-rated territory endeavoring to reach markets in the higher-rated territory by raising the rates on such traffic. Also, the consumers in the higher-rated territory would have to pay higher prices for products which they secured from the lower-rated territory. Therefore, the destination-level basis of making interterritorial rates has little to recommend it. It is wrong in principle, and, if adopted, would only make the situation worse than it is at present.<sup>18</sup>

A third method would be to continue to recognize separate rate territories, either with existing or different boundaries, but with

<sup>18</sup> The destination-level basis might conceivably be adopted by the voluntary action of the railroads, or by a decision of the Interstate Commerce Commission, with or without specific statutory direction. Steps in this direction have, in fact, already been taken by the Commission in regard to certain manufactured products which are shipped from the South to the East in competition with eastern products. But the practice is not yet widespread. A number of bills embodying the sense of this method have been introduced into Congress, but none has passed so far.

with rate scales that vary only in accordance with territorial differences in composition of traffic, costs, and carrier revenue needs. Classifications would be made uniform in all regions, and rate scales would be more nearly harmonized than at present. Territorial rate differences would be lessened but probably not be entirely eliminated. The method would not, however, get around the difficult problem of constructing interterritorial rates or settle the controversy about equal rates, distance considered, on competitive traffic shipped from higher-to lower-rated territories.

A fourth method would be to establish a uniform classification and uniform class-rate scales throughout the entire country. This method would abolish regional rate structures. Evidence developed by Government agencies indicates that average unit costs of the rail carriage of most commodities do not vary greatly from one area to another. Important exceptions are New England Territory where average costs are relatively high and the Pocahontas Region where average costs are relatively low. But with these and any other important exceptions appropriately taken into account in fixing rates, the class-rate levels and progressions could readily be placed upon a more nearly equal basis than at present, so far as average unit costs are concerned. Use of basic national class-rate scales would avoid the necessity, which now causes so much controversy, of constructing interterritorial class rates as some sort of a blend of the applicable intraterritorial rates.

### *Conclusion*

In this paper, the interterritorial rate problem is viewed from a national rather than a sectional viewpoint. A proper settlement of the issues involved should not depend, therefore, upon sole consideration of the gains or losses that any particular region, industry, or railroad might suffer or enjoy as a result of eliminating or reducing existing rate differences. Nor should the rate structure be manipulated to stimulate the location of industries in any particular area or community, or to preserve their location in other regions, or to foster either centralization or decentralization of enterprise, unless the Government is prepared to set forth clearly its social objectives and the procedures for realizing them insofar as they run counter to established and generally accepted rate-making principles and policies.

Ideally, those responsible for making rates, railroads and Gov-

ernment together, should remove barriers in the way of locating each industry at the point where the sum of production, transportation, and distribution costs are the lowest, or where, for service reasons, it is advantageous to locate an enterprise. Where it is possible to do so, changes should be made gradually so as to minimize the disruption of long-established arrangements. Generally speaking, a rate structure that confines the application of value of service factors to the differential treatment of commodities and possibly the preferential treatment of very long hauls will best serve the public. Territorial differences should be permitted to exist after a reasonable period of time for adjustment only on a positive showing by the carriers that significant differences in transportation conditions and costs exist as between the several regions.

Removal of existing differences in territorial class rates, except those justified by differences in transportation costs and conditions, would no doubt permit some manufactured products in the South and West to move more freely into eastern markets. Equalization of class rates to this extent, if it were carried out on the basis of Official Territory scales or on an otherwise low-level basis, would generally benefit the country as a whole. In time, each place or area would be more nearly able to develop types of enterprise, as far as freight rates are concerned, for which its human and natural resources were best fitted. In this way, a sounder geographical division of labor than has yet existed in the United States would be promoted.

Because of the relatively small volume of traffic moving under standard class rates, it follows that a reduction or elimination of class-rate differences would necessitate only a small increase in average commodity rates in the South and West to offset any revenue losses that might be incurred by the railroads on class-rate traffic. It is important to keep this point in mind in reaching a judgment on the issue of class-rate adjustments in relation to the freight rate problem as a whole. It is possible that, after an initial period of time following the adjustment of rates, the volume of traffic would expand sufficiently to restore the former earnings to the carriers. In such event, increases in commodity rates could be eliminated and the public would reap the full benefit of the lower rates.

The period of higher commodity rates could be shortened by adoption of a program of rail integration designed to create a relatively small number of strong systems. In this way, the needs of

numerous weak railroads scattered through the South and West could readily be cared for. Further rationalization of rail plant and equipment would also be helpful in establishing a lower and more uniform level of class rates in the South and West without placing a burden on the other traffic.

A word should be said in closing about the burden of proof in rate cases before the Interstate Commerce Commission. The vital question in this respect is whether the burden should be placed on those who assert or on those who deny that rates should be generally uniform, distance considered. The Commission is required by the statutes, as interpreted by the courts, to consider the facts about transportation conditions and costs in prescribing or approving rates. These facts are peculiarly within the knowledge of the carriers, and the burden should not be on others to prove them. As Dr. Nelson L. Smith, former Chairman of the Board of Investigation and Research, said in his dissent from the recommendation of the majority, "... Responsibility, both for the inadequacies of data and for the improvement of the existing rate situation, rests on the carriers and the regulatory agency."<sup>19</sup> The fact that shippers are now required to prove facts which are generally beyond their knowledge is one of the chief difficulties with the rate situation today. Therefore, whatever method or combination of methods may be employed to lessen existing differences in territorial class rates, the burden of proof should be placed upon those who wish to depart from uniformity rather than upon those who want uniformity. This would shift the burden of proof from those who, at present, are required to prove their case for uniformity, to those who would properly bear it.

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<sup>19</sup> Board of Investigation and Research, *Report on Interterritorial Freight Rates* 1943, p. 354.

## RESEARCH IN MILK MARKETING: A REVIEW

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FOR a number of years research workers in milk marketing have been engaged in studying measures for "rationalizing" the city distribution and the country handling of milk, and in computing the possible savings incident to the adoption of these measures. The preoccupation of research workers with this subject has been related to the search for ways of bringing about a lower cost of handling milk from the farm to the consumer. Depending upon the interest of the research worker or institution with which he has been affiliated, the objective of a lower margin has been to get a higher price to farmers for milk or a lower price to consumers. Public interest in the price of milk has always been high, but particularly so since 1929 when reduced purchasing power by masses of consumers curtailed for a time their buying of milk. An incidental effect has been that the price of milk has assumed considerable political significance, and this has in turn further contributed to discussion, study, and investigation of the "milk problem" by a number of people.

In line with this trend of research, the Storrs Agricultural Experiment Station of the University of Connecticut has issued a series of nine bulletins under the general title of "Efficiency of Milk Marketing in Connecticut,"<sup>1</sup> in which the main emphasis has been placed upon the consideration of measures for reorganizing the handling and distribution of milk, as a means of eliminating inefficiency and duplication, and upon the computation of potential

\* The views expressed in this paper are the author's alone.

<sup>1</sup> Storrs Agricultural Experiment Station, University of Connecticut, *Efficiency of Milk Marketing in Connecticut: 1. Supply and Price Interrelationships for Fluid Milk Markets*, Bulletin 237, by D. O. Hammerberg, L. W. Parker, and R. G. Bressler, Jr., February 1942; *2. The Transportation of Milk*, Bulletin 238, by D. O. Hammerberg and W. G. Sullivan, February 1942; *3. Economics of the Assembly of Milk*, Bulletin 239, by R. G. Bressler, Jr., and D. O. Hammerberg, February 1942; *4. Retail Distribution of Milk by Producers*, Bulletin 243, by D. O. Hammerberg, I. F. Fellows, and R. H. Farr, December 1942; *5. Economics and Biology of Alternate-Day Milk Delivery*, Bulletin 247, by R. G. Bressler, Jr., E. O. Anderson, D. A. Clarke, Jr., and E. N. Bilenker, May 1943; *6. Truck Costs and Labor Requirements on Milk Delivery Routes*, Bulletin 248, by D. A. Clarke, Jr., and R. G. Bressler, Jr., June 1943; *7. Milk Delivery in Rural Connecticut*, Bulletin 249, by Alan MacLeod and C. J. Miller, July 1943; *8. Possible Milk Delivery Economies in Secondary Markets*, Bulletin 252, by S. K. Seaver and R. G. Bressler, Jr., May 1944; *9. Conservation Possibilities in Retail Delivery in Major Markets*, Bulletin 253, by R. G. Bressler, Jr., D. A. Clarke, Jr., and S. K. Seaver, October 1944.

savings incident thereto.<sup>2</sup> These bulletins represent a research task of considerable scope and embody much effort in planning and execution of an elaborate project over a relatively long period of time. Not all of the bulletins, however, address themselves to the question of efficiency in milk marketing, and much of the space in those that do deal with that question, is taken up with a detailed description of the production and distribution of milk in Connecticut.<sup>3</sup> On this point they contain much valuable material and will undoubtedly be an important source of information for this purpose.

The Connecticut bulletins, as well as the similar studies by other research workers,<sup>4</sup> amply demonstrate the presence of elements of inefficiency and duplication in the organization of milk marketing in its various stages from the farm to the consumer. That these exist has, of course, been evident to any observer. The bulletins, however, go further and furnish a degree of measurement of the savings or economies that could be achieved by the elimination of these inefficiencies and duplications in the milk business through the adoption of measures involving the following:<sup>5</sup> (1) Allocation of producing areas, i.e., assignment of producers to milk markets so as to minimize the costs of moving milk from farms to markets, to be brought about through some control mechanism other than price; (2) reorganization of the milk trucking system, involving the consolidation of routes by a public agency or the carrying out of all trucking operations by a single private agency which would be established as a legal monopoly; (3) the adoption of every-other-day delivery; (4) the allocation or assignment of exclusive territories or zones to milk distributors; and (5) the distribution of milk from a single central plant.

<sup>2</sup> "To determine the magnitude of the savings that would result from more efficient milk marketing in Connecticut, studies are being made of the various operations involved in the movement of milk from producer to consumer. These studies attempt to devise methods of performing each operation as efficiently as possible. The costs involved in the reorganized operation are then computed and compared with the costs incurred under the existing system."—Bulletin 237, p. 4.

<sup>3</sup> Bulletin 243, on operations of producer-distributors in Connecticut, and Bulletin 248, dealing with truck costs and labor requirements on delivery routes, do not consider or propose any "rationalization" measures. Both of these studies are definite contributions to their respective fields.

<sup>4</sup> Bulletin 252 of the series under review contains a selected bibliography on milk distribution efficiency, listing 34 studies and papers on this subject.

<sup>5</sup> The bulletins also propose the establishment of country separating plants. Since this is a common method of handling milk in milksheds, there is nothing novel about the proposal, and it will not be considered further in this paper. It is assumed, however, that country separating plants will not be established unless milk distributors or cooperatives find it profitable to do so.

If the principal objective of the studies, aside from the descriptive matter they contain, was to compute, as a matter of academic interest, the technical savings or economies possible through the adoption of the proposed "rationalization" measures, then this objective has been reached. If, on the other hand, the studies have aimed at making a constructive and meaningful contribution toward an effective means of bringing about a lower price for milk to consumers, or a higher price to farmers, or toward the establishment of a sound social policy with respect to the milk industry, they fall short of the mark. The remainder of this article will be taken up with some comments as to the reasons, in the writer's viewpoint, for this. The discussion, which will fall into three parts, will conclude with some suggestions as to a possible approach for reducing the cost of distributing milk.

I. The technical economies possible from the adoption of some of the measures listed above are an aspect of the principle of the economies of large-scale production and of combination, and are, therefore, subject to the limitations of that principle. The increased efficiency obtainable from the "rationalization" measures belongs to that category of economies which are derived from an increase in the scale of production or size of business. This is obviously true in the case of the delivery of milk from a single central plant, but it is also applicable to some of the other measures.

But there are limitations to the principle in question, as there are limitations to the operation of other social laws, and these have to do with the diseconomies, such as increased organizational costs, which are introduced as the scale of output, or the size of business, increases. As Professor Knight has pointed out, in order to make the savings of large-scale production possible, "large organizations must exist and the cost of internal cohesion in large groups of men is very high."<sup>6</sup>

Applying this thought to the measures under consideration, it is evident that public agencies would need to be established to make the adoption of some of the measures possible or to carry them out. For instance, to achieve the most efficient allocation of milksheds would necessitate the determination of the optimum areas and the assignment of producers to the markets to which they are to ship milk.<sup>7</sup> This would need to be done every time there is a significant

<sup>6</sup> Knight, Frank H., *The Ethics of Competition and Other Essays*, p. 215.

<sup>7</sup> Difficulties with producers would be almost inevitable, especially with those for whom a change in markets would mean a lower price for their milk.



disturbance in conditions, such as new producers starting in production, changes in population in one market in relation to other markets in the State, etc.<sup>8</sup> To operate a trucking arrangement of maximum efficiency, truckers and producers would need to be paired with each other. Again, significant changes in the number of producers, or in the volume of production, would mean rearrangement of trucking routes and new assignments.<sup>9</sup> The costs of doing all this—the expenses of the directing and coordinating agency—are the diseconomies involved in the measures proposed. Of course, it should not be concluded that these diseconomies will necessarily offset the technical savings obtainable through a “rationalized” system of distribution. The point must be made, however, that these diseconomies cannot be ignored.

The significance of what has been said is demonstrated in some degree by actual conditions in the milk industry. While it is true that the larger firms in the milk business are generally the most efficient ones, yet there are many small firms that are probably just as efficient on an over-all basis and particularly so from the point of view of their ability to undersell the larger firms. In fact, the practice of small firms of underselling the larger ones was recognized by the State of New York when it fixed retail prices for milk from 1933 to 1937. It established a lower minimum price for relatively unknown brands of milk, these being the brands of small firms, and fixed a higher price for the well-advertised brands of the larger firms. In doing this it merely continued a condition which had existed in the milk trade in New York before retail price regulation was undertaken.<sup>10</sup> It is a common observation that the lowest price for milk in a market is frequently that charged, not by a large firm, but by a small or medium-sized firm.

II. It is one of the functions of an economic system to determine the kinds of goods and services to be produced and the relative

<sup>8</sup> The bulletins only consider milksheds and markets in the State of Connecticut. There is, of course, no reason why the process of allocating producing areas and assigning producers should stop at State lines, particularly when, as in Connecticut, milk is shipped to other States.

<sup>9</sup> This is not to say that trucking rates should not be regulated, or reduced where they are too high. This is a recognized function of established regulatory authorities and has no relation to a “rationalized” trucking arrangement. Nor can there be any objection to a farmers’ cooperative controlling the assembly and transportation of milk for all its producer-members or for all producers who may wish to patronize it. Finally, it goes without saying that there can be no objection to the conservation of trucking facilities in wartime.

<sup>10</sup> *Borden’s Farm Products Company v. Baldwin*, 293 U. S. 194; *Borden’s Farm Products Company v. TenEyck*, 297 U. S. 251.

amounts of each. But, in a free enterprise economy, this determination is made, not consciously by some individual, or by a group of individuals, or by a public agency, but rather automatically by the established social organization of the exchange system. Each individual is free to spend what purchasing power he has, in the way that he wishes, or to withhold it and invest it. It is presumed that, if he spends it on consumption goods and services, he will be able to decide the relative importance of his wants and will make corresponding expenditures. Producers, on the other hand, will supply the goods and services in greatest demand, and will utilize productive resources to produce such goods and services. To obtain these productive resources, including labor power and equipment, they will use the proceeds from the sale of the goods and services produced. The productive resources allocated to each use will correspond with the relative urgency of the demands, expressed in value terms.

Measures for limiting the home delivery of milk to alternate days,<sup>11</sup> or, as some have proposed, for abolishing home delivery entirely, would involve a substitution of conscious planning for the "planless" methods of the free enterprise economy. It would deny the satisfaction of certain wants by abolishing services which the public, or a section of it, is demanding and is willing to pay for. The "efficiency" obtained thereby would presumably be that of not expending resources in the production of these services.

"Efficiency" is a word of several shades of meaning and connotations. In economics, the term connotes the production of a large social income, expressed in market values of goods and services produced, and the realization of a maximum of want-satisfaction.

<sup>11</sup> The authors of Bulletin 247, which deals with every-other-day delivery, do not openly recommend the use of this system in peacetime, though the fact that the study was undertaken, and that it was published as a contribution to research in milk marketing at a time when every-other-day delivery was already established in Connecticut, would at least imply that the authors were thinking of postwar conditions. This implication is strengthened by the fact that the following statement is included in the conclusions (at page 34): "If alternate-day deliveries are continued in the postwar period, and if weekly earnings of routemen return to normal prewar levels, total delivery costs would be approximately 2.74 cents, a saving of 1.32 cents per quart." (The savings during the period covered by the study were only about 0.4 cent.) It is also strengthened by the statement in Bulletin 252 (at page 3) that, "the studies were conceived to have as much bearing on developments in the postwar period as in the war-time situation." In any case, the continuation of every-other-day delivery after the war is being seriously proposed in some quarters, as witness the statement (at page 83, Bulletin 247) that a number of health officials "thought that this method would become a permanent part of the milk delivery system."

The achievement of these requires, not only the full utilization of available productive resources, but also an optimum distribution of such resources, that is, an economical allocation of them among the various uses to which they may be put. This, in turn, necessitates an unimpeded movement of resources from less productive to more productive uses.

It is assumed that the resources being used in the delivery of milk to homes represents the most efficient use of them that can be obtained, and that the withdrawal of these resources from this service and their diversion for other purposes would result in a less efficient use. It would be particularly so, of course, if the resources withdrawn remained idle altogether. The opposition by labor unions in some areas to every-other-day delivery, even as a wartime measure, was precisely on the ground that their driver-members would be forced into less remunerative employments, or would become unemployed.

In the light of these factors, it is difficult to see what there is to be gained from measures which would deprive consumers of services for which they are willing to pay. Aside from the immediate war period, there is no shortage of productive resources which would require the kind of abstention and self-denial that is involved in curtailing home deliveries of milk. On the contrary, the main problem in the postwar period is expected to be that of providing full employment. This will be a difficult task under the best of circumstances, and it will not be aided by proposals which reduce employment. Moreover, it is to be pointed out that, if the social cost of unemployment is taken into account, the savings obtained by reducing services are considerably diminished. Thus, it may be found in the end that the public would in one way or another be bearing the cost of home-delivery services without actually obtaining them.

A corollary of what has been said is that, while consumers should be permitted to obtain such home-delivery services as they are willing to pay for, the converse should also be true, namely, that consumers obtaining such services should be required to pay for them. That is to say, they should be required to pay a higher price than that charged for milk sold from stores. When this is not true, that is, when store buyers of milk pay the same price as that charged for home-delivered milk, they subsidize home delivery. Since the income of consumers who have milk delivered to their

homes is generally higher than the income of those who buy milk in stores, failure to have a store differential (i.e., a lower price for milk at stores) has meant that lower-income groups have been subsidizing higher-income groups.

III. The establishment of monopoly or limited monopoly is involved in two, and possibly three, of the measures under consideration. The zoning of urban areas and the assignment of exclusive zones or territories to individual distributors, and the establishment of a central plant for the carrying out of all distributive functions, would obviously mean a substantial degree of monopoly control. The proposal for "rationalizing" the milk-trucking system would involve monopoly control only if this were the means selected for the attainment of the efficiency sought. Thus, under the guise of efficiency, monopoly would be established, at least with respect to two of the measures under consideration. This would not be a novel occurrence. It has been observed by some writer that the modern cartel movement marched under the banner of "rationalization." In contrast, however, with the development of monopoly in other fields, which had to overcome the anti-trust laws and public sentiment, the extension of monopoly in the milk business would presumably be compelled by the state.

The competitive system means more than freedom to engage in economic enterprise. It has historically been a progressive force in the development of our present-day economy, and has been responsible in good part for the advancement achieved in the economic welfare of western civilization.<sup>12</sup> As Professor Clark has pointed out, "under a competitive system industry has been revolutionized at an incredible pace and tremendous increases in physical productiveness have been forthcoming."<sup>13</sup> Monopoly, on the other hand, has meant higher prices, and, what is worse still, a reduced output.<sup>14</sup> "... the key to the meaning of monopoly lies in the power to control supply, and hence to maintain prices

<sup>12</sup> It is a curious thing that our present-day textbooks on economics, and the methods of teaching it, fail to impress upon students the progressive character of the competitive system as against the retarding influence of monopoly. It is interesting to compare this with the treatment of monopoly by Adam Smith in *The Wealth of Nations*.

<sup>13</sup> Clark, John M., *Social Control of Business*, p. 140.

<sup>14</sup> Recent elaborations of monopoly theory have, by applying the principle of marginalism, demonstrated the economic basis for the exercise of monopoly power to realize higher prices. It may be noted, however, that, not having demand schedules for the things they sell, monopolists have not been able to utilize fully the formulas for maximizing profits which were so carefully worked out by their authors.

and profits above the competitive level. This is naturally regarded as a reward for giving the consumer less for his money rather than more, and reducing the usefulness of the industry to the community, rather than increasing it."<sup>15</sup>

It is true that elements of monopoly have increased in importance in the last 50 years, due to a variety of causes, not the least important being "the natural urge to cease competing and combine."<sup>16</sup> Our public policy with respect to monopoly, as expressed in the anti-trust laws, remains unchanged, however. In fact, the Federal Government has, during the last few years, increased its activities in connection with the enforcement of these laws.<sup>17</sup> It is to be assumed that it is the collective viewpoint of those in charge of administering the anti-trust laws that the suppression of monopoly and the encouragement of competitive enterprise is still a sound social policy for the United States to follow, at least for certain industries.

Presumably, the extension of monopoly control in the field of milk marketing would be justified on the grounds that it would be publicly regulated, and that, through such regulation, the benefits of the resulting efficiencies would be passed on to the public.<sup>18</sup> There can, of course, fundamentally be no objection to this, assuming that the unit cost of handling milk from the farm to the consumer, that is, the distributive margin, would actually be reduced and that the economies of plant operation and nonduplicated deliveries would not be absorbed by a greater overhead cost arising from increases in salaries, bonuses, and similar payments. However, from what has been said above concerning the limitation of the law of the economies of large-scale production, it certainly cannot be taken for granted that the net effect of monopoly operation would be a lower distributive margin, especially when the cost of the proposed social control is taken into account. It is to be remembered that we are not dealing here with a natural monopoly, such as an electric or gas company, where competition is obviously impractical.

<sup>15</sup> *Ibid.*, p. 385.

<sup>16</sup> Clark, John M., *Studies in the Economics of Overhead Costs*, p. 147.

<sup>17</sup> One of the most important of the recent anti-trust cases is that of *United States v. South-Eastern Underwriters Association*, decided by the Supreme Court on June 5, 1944.

<sup>18</sup> "If efficiency can only be gained through a considerable degree of monopoly, the problem then is to control this monopoly in a way that will return the economies to producers and consumers."—Bulletin 238, p. 27.

Assuming that monopoly operation would bring about a net reduction in the distributive margin, the question still remains whether public control of monopoly would be sufficiently effective to secure the savings to consumers by a reduction in the retail price for milk, or to farmers by an increase in the return to them. The feasibility of public control in the milk business must be considered in the light of the existing social and legal framework. Account must be taken of the likelihood that local or State agencies, as distinguished from Federal agencies, would be the instruments of control. Milk control boards or commissions are now in existence in 16 states. Thirteen of these establish minimum prices at which milk may be sold by distributors, peddlers, or stores. It is in the operations of these boards that we must look for a clue as to the probable effectiveness of social control of the milk business. While space does not permit an evaluation of their work, the general observation may, nevertheless, be made that the means and facilities of local or State agencies for carrying out an effective program of monopoly control would be limited, in respect of both financial support and personnel. As Professor Clark has pointed out, the resources of the modern political state "are limited in comparison to the 'interests' it strives to control, and its experts are typically pitted against higher-paid experts, presumably of greater ability."<sup>19</sup>

What has been said above should not be interpreted to mean that there is no room for improvement in the milk marketing organization, or that improvements are not called for. On the contrary, possibilities of lower costs of handling milk do exist and they should be exploited to the full, but they lie, not in the "rationalization" of the industry, but in the creation of conditions which are favorable to, and which would encourage, price competition among milk distributors. Such competition, by compelling a lower price for milk,

<sup>19</sup> Clark, John M., *Social Control of Business*, p. 165.

Public ownership and operation of the milk distributive system involves a number of considerations different than the ones developed above. Government intervention of this type has been proposed by some as a solution to the problems facing a number of industries. One such proposal is the recommendation by Henry C. Simons, which suggests "direct government ownership and operation in the case of all industries where competition cannot be made to function effectively as an agency of control." (*A Positive Program for Laissez Faire: Some Proposals for a Liberal Economic Policy*, University of Chicago Public Policy Pamphlet No. 15, p. 18.) In milk, government ownership and operation has frequently been thought of as a function of municipal government. Cf. *A Survey of Milk Marketing in Milwaukee*, Agricultural Adjustment Administration, 1937; and A. J. Nixon and O. M. Reed, *Municipal Milk Distribution in Tarboro, North Carolina*, Agricultural Adjustment Administration, 1938.

would force the adoption of efficient methods of handling milk by individual firms. If prices are reduced by competition, it may be expected that costs will adjust themselves to the lower price level. The cost of distributing milk has exhibited considerable flexibility in adjusting itself to the actual return received by distributors. Analysis of milk distributive margins has shown that, when the return to distributors goes down, operating costs are brought in line through the elimination of inefficient handling methods and through adjustments in overhead costs. Inefficient milk routes and wasteful practices in acquiring and holding customers are eliminated, and high-cost distributors are forced out of business altogether, bringing an increased volume and lower unit costs to the distributors remaining in business. When the return to distributors goes up, on the other hand, inefficiencies creep in and overhead costs increase. The extent to which distributive margins are susceptible of being reduced through the operation of competitive forces may be judged from the fact that in the District of Columbia, with a cost of milk to distributors of 8.8 cents per quart, milk may be bought in retail stores at  $11\frac{1}{2}$  cents per quart, while in Pittsburgh, for example, with a cost to distributors of 7.9 cents per quart, the minimum store price is  $15\frac{1}{2}$  cents per quart.

One approach in the creation of conditions favorable to competition should be the avoidance of methods in the marketing of milk by farmers which will handicap small firms in competing with the larger ones. An illustration of other types of policies to be avoided is the practice, which is sometimes encountered, of fixing the same price for store milk as for milk delivered to homes, or the establishment of a higher price for milk sold in paper containers than for milk sold in glass bottles. It is in the search and development of these and similar lines of approach that economists and research workers may find the most fruitful fields for meaningful results, and not in the conduct of investigations that might as well be left to engineers, cost accountants, or efficiency experts.

Finally, it is not to be concluded from what has been said that we should become complacent about economic waste. But, since a condition of waste is not one peculiar to the milk industry, the solution, if there is one, must be along more general lines. Wastes and inefficiencies exist in many other fields of enterprise and particularly in retailing. And, what is more serious still, economic wastes of this character are dwarfed by the stupendous losses incident to business depressions.

## NOTES

### CONSOLIDATED BALANCE SHEET AND INCOME STATEMENT FOR AGRICULTURE\*

A COMPARATIVE consolidated balance sheet and a comparative consolidated income statement for farms of the United States were employed as tools for economic analysis in the "Impact of the War on the Financial Structure of Agriculture,"<sup>1</sup> which recently was published by the Bureau of Agricultural Economics. It is hoped that these financial statements will appear each year hereafter. A number of matters of definition and procedure need to be clarified. The uses and limitations of these reports should be carefully considered. This note is intended to review a few of the pertinent issues.

#### *Concepts*

The going concern is the entity for which the consolidated balance sheet and the consolidated income statement appearing in the "Impact of the War . . ." were prepared. These financial statements represent neither summations of the financial condition of individual farm operators, nor of persons engaged in farming and living off farms, nor of persons engaged in farming and living on farms. Income series for these three special groups, covering income from farming and from other sources, are in fact prepared by the Bureau of Agricultural Economics. But the consolidated balance sheet and income statement appearing in the "Impact of the War . . ." do not reveal the financial condition of any combination of persons but only of a combination of farming concerns.<sup>2</sup>

The farming concerns should therefore be defined. The "Impact of the War . . ." study does not offer an explicit definition of a farming concern. Nevertheless definitions are implicit both in the balance sheet and in the income statement. The two definitions

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\* The author of this note is indebted to many of his colleagues on the BAE staff for helpful criticism. The author alone is responsible for the views and suggestions expressed.

<sup>1</sup> By A. S. Tostlebe, D. C. Horton, R. J. Burroughs, H. C. Larsen, L. A. Jones, and A. R. Johnson, under the direction of Norman J. Wall, September 1944 in mimeographed form. Printed edition about May 1945.

<sup>2</sup> A concept entirely different from any of these is that used in the national income estimates of the Department of Commerce, *National Income in the United States, 1929-35*. In the concept of the Commerce Department, income of agriculture is limited to that of operators from their own operations and not including rent of any land they may lease to other farmers. All rents paid are classed with financial income.



are not altogether consistent with each other. The balance sheet includes the household furniture and equipment among the assets. The income statement does not include an implicit investment return, i.e., rental income and depreciation expenses, on account of the furniture. The balance sheet includes the value of the family automobile. The income statement assigns only 40 to 50 percent of the cost of operating the family car to farm expenses. The balance sheet includes various intangible assets such as United States savings bonds and bank deposits on which interest accrues or is paid in cash. The income statement does not include income from these sources.

The implicit definition contained in the balance sheet seems to say that farming activities include production of agricultural products for sale and for home consumption, participation in cooperative marketing and credit organizations, investment in shelter and furniture for the farm family, provision of transportation in the farm truck and the family automobile, and management of the intangible financial resources of the farm operator, including funds and investments not required in farming.

The implicit definition contained in the income statement seems to say that farming activities include production of agricultural products for sale and for home consumption, investment in shelter but not furniture, and provision of transportation in the farm truck or family automobile for farming purposes only. Only 40 percent (and recently 50 percent) of the depreciation expense on the family automobile is charged to farming. The remaining depreciation is assumed to be assignable to personal rather than to farming expense. Income or expense incident to the operator's furniture or personal intangible assets are omitted from the income statement.

If the consolidated income statement were revised to include an estimate of income produced by all items included in the existing consolidated balance sheet, the reported return to farms would be increased somewhat though not to an important extent. The disadvantage of such a revision would be in the broadening of the term "farming" to include activities that are virtually unrelated to agricultural processes.

If, on the other hand, the consolidated balance sheet were revised in such a way as to be consistent with the existing consolidated income statement, then furniture, 50 or 60 percent of the valuation of passenger automobiles, and intangible earning assets of farm

operators would be dropped from the balance sheet. To eliminate intangible earning assets, time deposits would be deducted from the "currency and deposits" item and United States savings bonds and investments in "co-ops" would be dropped. However, currency, demand deposits, and warehouse receipts which produce no direct income could be retained. Such assets, at least in part, are essential to farming operations. Only 40 or 50 percent of the valuation of farmer-owned family automobiles would be retained with farming assets.

A definition of farming which would permit a reconciliation of the balance sheet with the income statement in the manner just indicated and which would list only items that can be measured, follows: Farming includes the production of agricultural products for sale and for home consumption, the investment in shelter for the farm family, the transportation of persons or commodities for farming operations only, and the management of cash, demand deposits, and warehouse receipts belonging to farm operators. Stated somewhat more concisely it runs thus: Farming includes production of plants or animals and their products for sale or home use and other activities directly incident thereto. A balance sheet conforming to this definition is shown in table 1.

The investment in furniture and in that share of the family automobile attributed to nonfarming use, can and as suggested should be eliminated from the balance sheet. Such assets are personal property of the operators but are not a part of the farm plant. By the same token it would seem that the investment in housing (or at least most of it) should be eliminated.

As a practical matter the investment in housing cannot easily be excluded from the balance sheet. Farm real estate valuations are not conveniently separated into those pertaining to housing and to other real estate. Moreover, if this asset were eliminated, a portion of the mortgage debt also would have to be eliminated, as mortgage debts are secured by real estate as a whole. The debt secured by farm housing is not a separate element.

The elimination of housing from the balance sheet also would make difficult a reconciliation with the income statement. The data for taxes, insurance, and interest which appear in the income statement include a portion attributable to farm housing which cannot be separately identified. Only expense for maintenance and depreciation of the farm house could be identified. Since housing expense

remains in the income statement, the implicit gross rental income from that housing also must remain. In effect, then, the net income from farming includes the implicit interest income on the investment in the dwelling unit.<sup>3</sup>

TABLE 1. PROPOSED CONSOLIDATED COMPARATIVE BALANCE SHEET OF FARMS OF THE UNITED STATES, 1940-44<sup>1</sup>

Item	Jan. 1, 1940	Jan. 1, 1941	Jan. 1, 1942	Jan. 1, 1943	Jan. 1, 1944	Net change 1940-44	
	Million dollars	Million dollars	Million dollars	Million dollars	Million dollars	Per- centage	Million dollars
<b>Asset items:</b>							
<b>Tangibles:</b>							
Real estate <sup>2</sup>	33,642	34,026	36,611	39,963	45,592	+ 36	+11,950
Non-real estate:							
Machinery and equip- ment <sup>3</sup>	2,569	2,696	3,212	3,444	3,477	+ 35	+ 908
Livestock	5,132	5,320	7,042	9,541	9,526	+ 86	+ 4,394
Crops <sup>4</sup>	2,339	2,493	3,409	4,576	5,595	+139	+ 3,256
<b>Intangibles:</b>							
Currency and demand deposits	2,604	2,953	3,826	5,593	7,697	+195	+ 5,093
Warehouse receipts	323	470	594	490	513	+ 59	+ 190
<b>Total assets</b>	<b>46,609</b>	<b>47,958</b>	<b>54,494</b>	<b>63,607</b>	<b>72,390</b>	<b>+ 55</b>	<b>+25,781</b>
<b>Equity items:</b>							
<b>Liabilities:</b>							
Real-estate mortgages	6,536	6,534	6,484	6,117	5,635	- 14	- 951 <sup>5</sup>
Non-real-estate debt:							
To principal institu- tions <sup>6</sup>	1,940	2,233	2,331	2,512	2,359	+ 22	+ 419
To others <sup>7</sup>	1,455	1,675	1,748	1,464	1,180	- 19	- 275
<b>Proprietors' equity:</b>							
Farmers' equity in non- real estate <sup>8</sup>	9,572	10,024	13,804	19,668	23,259	+143	+13,687
Landowners' equity in real estate	27,056	27,492	30,127	33,846	39,957	+ 48	+12,901
<b>Total equities</b>	<b>46,609</b>	<b>47,958</b>	<b>54,494</b>	<b>63,607</b>	<b>72,390</b>	<b>+ 55</b>	<b>+25,781</b>

<sup>1</sup> All figures are estimated, the margin of error varying with the items.

<sup>2</sup> As of April 1 each year.

<sup>3</sup> Includes only 40 percent valuation of passenger automobiles.

<sup>4</sup> Crops stored in unbonded warehouses escape inclusion either in inventory or warehouse receipts. Likewise commodities in bonded warehouses which are not covered by a CCC loan agreement escape inclusion in the estimate.

<sup>5</sup> Because of rounding, this figure is 1 million dollars less than a figure previously published.

<sup>6</sup> Gross; includes debt underwritten by CCC.

<sup>7</sup> Although these figures are believed to be reasonable, they lack supporting evidence.

<sup>8</sup> Includes intangibles.

### *Limitations and Peculiarities*

Although providing numerous advantages, the consolidated balance sheet and the income statement for agriculture are subject to various limitations and they manifest certain peculiarities. Some relate to the logic of the statements *in toto*, others to faults or peculiarities of particular items.

In the first place the consolidated statements are like a mathe-

<sup>3</sup> The emphasis on the investment or saving or capital "carrying" function in lieu of the shelter function was suggested by my colleague E. Fenton Shepard.

matical average in that they cloak individual differences. Financial weaknesses of individual concerns become hidden and financially strong enterprises cannot be separately identified.

To offset this defect and to obtain a more adequate picture of the situation, a representative sample of balance sheets and income statements from individual farmers should be obtained so that frequency distributions of individual conditions may be ascertained according to location, types of farming, tenure, etc.

Another criticism of the use of the consolidated balance sheet concept for farming as a whole is this: Virtually all farms are operated as individual proprietorships. Creditors' rights in an unincorporated business constitute personal debts of the proprietors. Such debts extend to the entire personal estate of the debtor, and are not limited to the enterprise for which the credit is extended. In other words, the going concern concept does violence to the legal facts of the matter. Debts and assets of the individual proprietors in agriculture are not, in fact, limited to farming. Nevertheless the consolidated balance sheet for agriculture must be based on the going concern concept. Otherwise it would not be applicable to farming as such, but rather to individuals with various interests in agriculture, some of a proprietary and some of a creditor-like character. Consolidated balance sheets for corporations escape this dilemma since the legal and business entities are identical.

### *Some Particular Items*

In addition to the foregoing limitations of the consolidated balance sheet and income statement for farming as a whole, there are numerous detailed technical limitations and peculiarities of the particular data used. A full understanding of these limitations or special characteristics of the data requires a study of the preliminary publications and recent releases of the *Income Parity for Agriculture* series.<sup>4</sup> Only a few of the points involved can be discussed in this paper.

*The Balance Sheet.* In the first place, tangible assets are valued at current prices received or paid by farmers for asset items in existing condition. Assets are not carried at original cost. The Bureau of Agricultural Economics accomplishes the general objective of maintaining valuations in current prices in various ways, depending on the asset item involved. This practice contrasts sharply with

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<sup>4</sup> U. S. Dept. Agr.—a study started in 1936.

current practice of business accountants who usually value assets at the market price or cost, whichever is lower, or in the case of fixed assets at cost less depreciation.

The meaning of the valuation of certain items of the balance sheet and of the income statement must be interpreted in the light of the *method used in calculating depreciation*. The inventory items are depreciated at a constant average percentage of value remaining each year and not at a constant percentage of original value. Some expenditures for repairs are included with vehicle operation. Other expenditures for repairs, which in general cannot be isolated from expenditures for new structures or equipment, are added to the asset base each year before the depreciation rate is applied. The effect on both asset values and expense of operation is consistent in either case. The percentage rate is adjusted in the light of each decennial census. The method employed is readily sanctioned by practical considerations in obtaining data. The method is reasonably logical for dealing with the large volume of cases to be found in agricultural statistics. Certain farm-management specialists recommend the method for individual farms. It is said that maintenance and operating costs increase as depreciation charges and operating efficiency decrease. The expense of using equipment is said to be properly apportioned over time by this device. However, the effect of the method both on the valuations of the consolidated balance sheet and the expenses of the consolidated income statement should be clearly recognized.

Compared with straight-line methods, the use of a constant percentage rate of depreciation on remaining investment rather than on original investment increases expense in a period when a high proportion of inventory is new and reduces it as inventory becomes aged. The balance sheet valuations change in conformance with the dollar volume of depreciation charges. If the average age of the items of inventory remains constant at the midlife of all equipment, the results are almost identical with a straight-line method of calculating depreciation. But it seems well to inquire whether there is an adequate reason, as the method would imply, for 50 hours' use of a new tractor to cost a farmer several times more for depreciation than 50 hours' use of an old tractor. On the other hand, it is true that the sale value of used equipment drops abruptly in the first years of life of the equipment.

Were liquidation values sought, the method might be suitable

although the decline in book value in the initial years of life of equipment might even exceed the decline in resale values. This is a subject worthy of factual study. The use of liquidation values would negate the going concern principle. Fortunately in dealing with the mass of equipment of the United States in an over-all way, this problem is not acute. Nevertheless, the rate of purchase of new equipment is not uniform nor is the average age of equipment necessarily at midlife.

The valuation of the equipment on a current price basis is for the purpose of computing depreciation in such a manner that charges will be equal to the amount required at current costs to maintain existing equipment. This method has the effect of increasing depreciation in a period of generally rising prices and of minimizing depreciation in a period of generally falling prices. The cost of production is not represented in terms of dollars of original investment used up in the process of production. Over a long period of rising prices much more than actual investment in farming is charged off as an expense of production. The reverse would be true in a period of secular price decline.

The complete elimination from the balance sheet for agriculture of all asset and liability elements in which the CCC is interested, might be justified. Bank loans to farmers under the CCC plan are without recourse on the farmers. The commodities securing the loans will constitute full satisfaction of the farmers' notes. Moreover, the income statement counts farmers' receipts from direct or guaranteed loans of the CCC as income to the farmer. However, if the farmers' obligations to CCC were removed from the liabilities, a corresponding adjustment of assets would be necessary. The warehouse receipts, which would be the principal asset affected, could easily be eliminated. The remainder, in the absence of a direct measure, would have to be removed from crops on farms. The discrepancy in the data from different sources for CCC loans at times amounts to as much as 100 to 200 million dollars, so that the error added to the crop inventory might be 3 percent or more. Although not serious in its proportions, it is desirable to eliminate it. However, the removal of the CCC items should await more exact knowledge of the amounts involved.

*The Income Statement.* Practical considerations in obtaining data dictate the presentation of certain items in the income statement in such a way that the distinction between capital and operating trans-

actions is not clearly evident. The interrelation of purchases, inventory adjustment, expenses, and income is not shown in the customary manner of the income statement of a private business firm. Nevertheless, in the final analysis the results are somewhat the same as though a traditional income statement had been employed.

In the first place, the inventory adjustment appearing on the BAE income statement shows positive or negative changes during a given year in the market value, in terms of prices at the end of the year, of the increase or decrease in the quantity of crops for sale on farms and of the number of livestock whether or not for sale. This adjustment, which arises from the concept of national income used by BAE, is from an accounting viewpoint the logical corollary of the BAE practice of charging purchases in any period as an expense.<sup>5</sup> The inventory adjustment is a means for subtracting the cost of any unsold inventory out of expense and of adding such cost to the assets as of the end of the accounting period.

The method of inventory adjustment also is applicable to the continuous genetic elements of farming which are like manufacturing. This is the case with work stock, and breeding animals, and animals which are raised for their products like milk, wool, or eggs. Such animals, like machines, become less valuable with use. Thus the cows which constitute the "calf and milk factories" wear out in time. In such a case, as value declines, there is a negative influence on the inventory adjustment. Such a negative adjustment is equivalent to an entry for depreciation expense for the aging animals.

Since the inventory adjustment is in terms of prices as of the end of the accounting period rather than in terms of prices paid for goods held in the inventory, the influence on net income of price changes in the inventory items is entered on the record before sales have materialized. Conservative business accountants generally prefer to value the inventory at cost or market, whichever is lower. In so doing they allow declining prices to influence net income in the immediate accounting period but they do not consider the effect of rising prices until sales actually materialize. They "take their beatings" now but prefer not to "count their chickens before they hatch." As a practical matter the BAE practice appears more suitable for dealing with summary data for all of agriculture. The

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<sup>5</sup> Horses and mules are included with "other operating expenses" rather than with "livestock bought."

method also is quite as logical as that of the more conservative business practice.<sup>6</sup>

The consolidated income statement departs from the logic of the balance sheet equation by the inclusion with production costs of interest on non-real-estate debt. In fact interest paid by a farmer is a return on someone's investment whether it be paid to mortgage creditors or to other creditors. The reason for retaining the interest on non-real-estate debts with production costs while treating mortgage interest as a distributive share is to maintain consistency with the present procedures used in estimating national income. A further difficulty with respect to the interest on the non-real-estate debt is the lack of a basis for estimating the interest on debt to miscellaneous lenders such as merchants, dealers, etc. A figure is included for such interest but it lacks a firm statistical basis.

### *Advantages*

Despite the limitations to which the consolidated balance sheet is subject it is of considerable value in the analysis of the financial status of agriculture. The relative importance of changes in asset or equity items becomes evident. The capacity of the farm population to buy goods and services is roughly indicated. Comparative statements reveal changing interrelationships occurring with the passage of time. The extent of farmers' and nonfarmers' participation in agriculture is at least roughly shown. Changes in specific items of the balance sheet often have significance to the entire economy which becomes more evident in a balance-sheet setting.

Serving to focus attention on broad trends and relationships, the comparative consolidated statements subordinate minor elements and emphasize the major tendencies. For some purposes,

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<sup>6</sup> BAE often reports "realized net income" without inventory adjustment when the emphasis is on agriculture only and when the figure is for comparison neither with nonagricultural income nor with national income. In the long run the income to agriculture probably would be about the same by either method. Moreover, as O. C. Stine contends, the elasticity of demand for agricultural products in the mass at any one moment of time may be near unity. If so, it follows that the carrying of somewhat more or somewhat less inventory at any one time would not influence income in the least. Of course, this reasoning is inapplicable to the individual farmer who in general enjoys perfect elasticity of demand. In any case, variations of aggregate farm inventory are price-determining forces. Hence whatever the elasticity of demand, an inventory adjustment cannot be made at a price at which total inventory could be liquidated on a spot basis. The current price plus carrying costs under favorable conditions might be realized throughout a marketing period. In the opinion of the author the inventory adjustment is warranted by the objective of assigning costs to the accounting period in which income is given recognition.



especially in planning public policy, these major trends are quite as important as the detailed distribution of farms according to their financial condition and earnings. It is hoped that the consolidated statements not only will provide a basis for an over-all appraisal of the financial structure of agriculture, but will stimulate a study of the distribution of farms according to financial condition by location, type of farming, tenure, and other characteristics.

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### TRENDS IN MAJOR CROPLAND USE IN THE UNITED STATES, 1909-1941

THERE is a widespread current interest in land utilization, land development, and agricultural productivity. The war years have demonstrated the enormous productivity of American agriculture even under somewhat unfavorable conditions. Proposals have been made for irrigation, drainage, and other land development in the postwar years. The possibility of postwar agricultural "surpluses" haunts many persons. The purpose of this brief note is to provide information on one aspect of this situation—a summary and comparison of related items that is not elsewhere available, as far as the author can learn.

The products from harvested cropland can be used for three broad general purposes: (1) to feed work animals, and hence be used for other agricultural production; (2) for sale abroad; and (3) for domestic consumption. Some of the potential cropland may be fallowed, or lie idle, or be undeveloped, or the crops planted there may be a failure. The crops harvested may be sold or fed to livestock, and the animals or their products sold. Either crops or livestock sold for domestic use may be used for direct human consumption or may be used industrially. More elaborate classifications, or classifications on more than one basis, could be made, but our threefold classification of use of harvested cropland has the merit of simplicity and usefulness. Elaborate calculations could be made of the acreages in each use, but relatively simple estimates will show the major trends.

The total area of cropland harvested increased slowly and rather steadily from 1909 to 1932, fell sharply in the drought of 1934, and stabilized from 1935 to 1941 at a level 20 to 30 million acres under

TABLE 1. USE OF CROPLAND IN THE UNITED STATES, 1909 TO 1941

Year	Cropland harvested		Volume of agricultural production exported <sup>2</sup>	Horses and mules on farms (Jan. 1) <sup>3</sup>	Acreage of cropland used for			Per capita cropland harvested for domestic consumption
	17 principal crops	46 crops plus 19 fruits and nuts <sup>1</sup>			Export <sup>4</sup>	Feed for farm work animals <sup>5</sup>	Domestic consumption <sup>6</sup>	
	<i>million acres</i>	<i>million acres</i>	<i>percent</i>	<i>thousands</i>	<i>million acres</i>	<i>million acres</i>	<i>million acres</i>	<i>acres</i>
1909	299.6	318.1	10	23,816	31.8	92.2	194.1	2.2
1910	305.7	324.2	13	24,211	42.2	93.7	188.3	2.1
1911	310.6	329.1	14	28,847	46.1	96.2	186.8	2.0
1912	309.1	327.6	14	25,277	45.8	97.8	184.0	1.9
1913	313.1	331.6	15	26,691	49.7	99.4	182.5	1.9
1914	314.4	332.9	10	26,178	33.3	101.3	198.3	2.0
1915	320.1	338.6	15	26,493	50.8	102.5	185.3	1.9
1916	320.9	339.4	17	26,534	57.7	102.7	179.0	1.8
1917	328.9	347.4	13	26,659	45.2	103.2	199.0	1.9
1918	341.2	359.7	18	26,723	64.8	103.4	191.5	1.8
1919	342.6	361.4	19	26,490	68.7	102.5	190.2	1.8
1920	338.0	356.5	14	25,742	49.9	99.6	207.0	2.0
1921	337.6	356.3	17	25,137	60.5	97.3	198.5	1.8
1922	333.6	352.2	14	24,588	49.3	95.2	207.7	1.9
1923	331.4	351.4	14	24,018	49.2	93.0	209.2	1.9
1924	332.9	352.7	16	23,285	56.5	90.1	206.1	1.8
1925	336.9	357.1	12	22,569	42.9	87.3	226.9	2.0
1926	335.9	356.1	13	21,986	46.3	85.1	224.7	1.9
1927	334.3	355.7	13	21,192	46.2	82.0	227.5	1.9
1928	338.2	358.9	12	20,448	43.1	79.1	236.7	2.0
1929	341.5	362.3	10	19,744	36.2	76.4	249.7	2.1
1930	344.9	366.4	8	19,124	29.3	74.0	263.1	2.1
1931	338.9	362.7	7	18,468	25.4	71.5	265.8	2.1
1932	344.5	368.9	8	17,812	29.5	68.9	271.5	2.2
1933	313.1	337.3	10	17,337	33.7	67.1	236.5	1.9
1934	276.1	301.3	8	16,997	24.1	65.8	211.4	1.7
1935	311.4	341.8	7	16,683	23.9	65.4	252.5	2.0
1936	294.6	321.0	6	16,226	19.3	62.8	238.9	1.9
1937	318.0	346.0	7	15,802	24.2	61.2	260.6	2.0
1938	316.3	347.1	8	15,245	27.7	59.0	260.4	2.0
1939	297.6	331.2	7	14,792	23.2	57.2	250.8	1.9
1940	300.5	339.7	5	14,481	17.0	56.0	266.7	2.0
1941	304.6	343.1	4	14,136	13.7	54.7	274.7	2.1

<sup>1</sup> Data for 29 crops and 19 fruits and nuts not given prior to 1919; estimated as 18.5 million acres annually for earlier years.

<sup>2</sup> 1909 to 1936, in *Agricultural Situation*, Sept. 1937, p. 23. Recent years estimated on basis of value of exports.

<sup>3</sup> *Agricultural Statistics*, 1942, Table 579, page 450.

<sup>4</sup> Obtained by multiplying the volume of exports by the total acreage of cropland harvested.

<sup>5</sup> On the basis of 3.37 acres of cropland (in addition to pasture) required per horse or mule. Technology on the Farm, a special report of the Department of Agriculture, August, 1940 estimates (p. 44) that 5.8 million acres of cropland will be released by a reduction of 1.5 million head of horses and mules.

<sup>6</sup> Difference between total cropland harvested and that needed for export plus feed for work animals.

under the peak (table 1). The increase in acreage occurred largely in the Great Plains, and the decline was largely there also, although changes occurred elsewhere, notably in the South. The acreage of land in fallow and idle rose somewhat while the acreage of harvested cropland was increasing, and rose sharply as the latter declined.

The number of horses and mules on farms rose slowly from 1909 to 1918, and since then have declined to not much over half of their peak numbers. The number of horses and mules not on farms—in cities and elsewhere—probably followed a generally similar course. The influence of the truck and the tractor is evident. There has probably been some increase in riding and other pleasure horses in recent years, but the numbers involved are small compared with the decline in workstock. On the assumption that the rate of feeding and crop yields have remained constant, the acreage of harvested cropland required to produce feed for farm horses and mules has declined almost 50 million acres since 1918. Other estimates place this figure as high as 60 million acres. Further declines are in prospect for the postwar years, when tractors become freely available again. As there will always be some work animals on farms, this shift cannot replace an equal acreage in the future. The change from animal to mechanical power has been virtually completed in the cities; it probably freed from one-fourth to as much cropland as has been freed by the shift in source of farm power.

Agricultural exports had been declining prior to World War I, but rose sharply then. Since 1919, exports as a percentage of total agricultural production have fallen steadily. They continued to fall after World War II began in Europe and until we entered the war. It has been assumed that the acreage of harvested cropland was in proportion to the volume of exports; some exports, like tobacco and fruit, require little cropland, but others, like wheat, require a great deal. A more precise estimate could have been made, at the cost of considerable effort, by considering the exports of each commodity. The general importance of exports, in terms of cropland, are fairly well shown, however. The decline in exports from 1919 to 1941 freed about 50 million acres. The causes of the decline in agricultural exports are complex; our unwillingness to admit imports and thus provide exchange, our determination to hold prices above world levels, the shift in comparative advantage which permitted our industrial products to compete on world markets

more effectively than our agricultural products, and, perhaps above all, the extreme nationalism in some normally importing nations which were determined to become self-sufficient. The postwar outlook is uncertain, and depends largely on international political arrangements. On the one hand, exports could not decline to release more than 15 to 20 million acres used for exports after 1934; at the other extreme, few expect them to increase enough to require more than perhaps 20 million acres above the level of those years.

Deducting the acreage used for farm work animals and for export, the acreage of harvested cropland used for domestic consumption rose from less than 200 million acres prior to 1920, to well over 250 million acres after 1937. The increase was fairly regular from about 1916 to about 1932. There was a sharp decline to 1934, and recovery since to about the 1932 peak. As a residual item, this figure is subject to any errors introduced elsewhere, and includes a variety of uses. If feed for non-farm work animals could be excluded, the remainder would show an even steeper upward slope. If reduced to a per capita basis, the acreage of cropland harvested for domestic consumption has been remarkably constant since 1909, varying from a low of 1.7 acres to a high of 2.2 acres, and with no perceptible trend upward or downward. Only 8 out of the 33 years had less than 1.9 or more than 2.1 acres per capita of cropland harvested for domestic consumption.

If we regard the mechanization of American agriculture and the loss of major foreign outlets for agricultural commodities as two episodic events, occurring contemporaneously largely from fortuitous causes, then obviously from these causes we could not continue to secure a constant area of cropland harvested per capita if our population continued to increase at an undiminished rate. Further mechanization and continued loss of export markets might add 40 to 50 million acres for domestic consumption, compared with the 1935-39 years. This would maintain the per capita figure constant for an additional 20 to 25 million people, or to a total population of 155 to 160 million people. Irrigation and drainage enterprises might some day add as much as 50 million acres (though at rather heavy cost), or would maintain the per capita figure for another 20 million people (assuming some work animals on these new lands). According to present population forecasts, the population of this country is likely to reach a peak at less than 175 to 180 million people. The per capita acreage of harvested cropland

for domestic consumption can therefore remain constant, if we so desire, and if all of the above adjustments are made.

Why should we seek to maintain a constant per capita acreage of cropland harvested for domestic consumption? Preoccupation with acreage ignores the other dimension of production—output per unit of area. Consideration of the extensive margin of production should not blind us to the intensive margin. Increased use of fertilizer, improved varieties and breeds, and more intensive rotations and feeding practices can substantially increase total output from the same area. It may be cheaper to do so, than to increase the area in cultivation. The war has given us some hint of possibilities in this direction. With ample machinery, labor, fertilizer, and other supplies, agricultural production can be stepped up materially on the present area, if agricultural prices warrant. The major change in cropland use over the next 2 or 3 decades is likely to be increased intensification. This will be particularly striking on our better soils and in our better farming areas.

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## A POSTWAR FORWARD PRICING PLAN FOR AGRICULTURE

**F**ORWARD pricing is one of the most promising ideas which has appeared in agricultural economics in recent times. It recognizes the true function of price, namely, that of directing the uses of productive resources in response to the desires of all people and to the changes in the state of technology. Furthermore, it is the nearest thing yet devised to answer the farmer's greatest need and desire—a price which he can use as a basis for his planning.

Agricultural prices in the past have not been very effective in directing the uses of agricultural resources because the prices at the time of planning were not a reliable indication of the prices at the time of marketing. Consequently, the farmers to a large extent based their production plans on other factors. One of the reasons for this lack of reliability is the violent price fluctuations resulting from short-run factors. As a result, the long-run trends of prices, which should be the primary basis for planning, were not

recognizable. The long-run trends reflect the changes in the peoples' habits and tastes, the changes in the agricultural production technology, the discovery of new uses for agricultural products, the discovery of substitutes for agricultural products, and the expansion or contraction of the various sections of the agricultural economy. The influences of these factors should provide the foundation for the prices used by the farmers in their planning, the short-run factors exerting minor effects.

Several things must be achieved in any forward-pricing plan before it can be effective. The prices must be set before the farmers plan their production programs, and they must be guaranteed until the farmers have an opportunity to harvest and sell their commodities. In addition to guaranteeing the prices for the production period, the rate of change of the guaranteed-price must be kept within limits in order that the farmers would have some idea of the price to expect in the near future. Also the guaranteed-price must be free to move in response to the activities in the market place and must not be restricted or controlled by any group of individuals. These conditions must be achieved before it is possible for the dynamic forces of society to direct the economy toward a proper equilibrium without the wastes associated with drastic adjustments. A perfect equilibrium can never be achieved by a dynamic society, but at any given instant there is a set of conditions which would represent a true equilibrium. It is toward that condition which society must always be working and the market place is the best guide yet conceived by man toward that goal.

The basic points of the proposed forward pricing plan for agriculture are as follows:

1. The government guarantees a price for each agricultural commodity which can be stored.
2. The guaranteed-price would be determined automatically by the behavior of the market but the amount of change in any year or productive period would be limited to a certain maximum percent of the previous price.
3. The maximum percent change at any one time would depend upon the amount of the commodity that the government has in storage at the time. The maximum percent decrease in the guaranteed-price would be a direct function of the amount in storage, whereas the maximum percent increase would be an indirect function.

4. The guaranteed-price would be different for the various grades of a commodity and also for the different sections of the country.
5. The government would buy an unlimited quantity of any commodity at the guaranteed-price whenever the market could not absorb the supply at that price.
6. The government would sell as much of any commodity as the market would absorb whenever the market price exceeded the guaranteed-price by a certain percent. This percent would provide a range in price when the government would neither buy nor sell, thus eliminating a large number of transactions.
7. The guaranteed-price would be changed every six months, year, or whatever period is most in agreement with the production technology of the particular commodity.
8. The various percent changes in the guaranteed-price and their relationship to the government stocks would be different for each commodity.

The commodities to which the plan could be applied include all those which can be stored satisfactorily. At the present time they would include most of the grains, hay crops, and fiber crops. Also, many products can be processed and stored in that condition, for example, dried eggs. In the future many other commodities very likely could be included as storage and other techniques improve. It is only necessary that the commodity can be stored for a year or two because the government stock can be sold and replaced with fresh stock each year if necessary. Livestock is not included but it may be possible to include them indirectly by guaranteed prices of products processed from livestock. Also, the livestock producers would benefit from the stabilized prices of livestock feeds.

The prices guaranteed by the government would not be determined by any group of individuals but they would move up and down in response to the supply and demand of these commodities. The rate of change, however, would be limited to certain percentages of the previous guaranteed-price. In that way, the short-run factors could never cause any drastic changes in the prices hiding the influence of the long-run factors. Also, it would provide the farmers with the necessary time to make adjustments without serious hardships to them. The farmers would have not only a definite guaranteed-price for one production period to use as a basis for their planning but they would have also a guaranteed-price fan (table 1) which would indicate approximately what prices they could depend upon during the next two or three years.

The shape of the guaranteed-price fan would depend upon maximum percent changes permitted at any one time, or in other words, the maximum rate of change allowed. At this stage it is impossible to give any definite figures for these maximum percent changes except for illustrative purposes, but it is possible to set forth the principles which must be considered. They must be large enough to achieve the necessary adjustments in production over a period of time. In the early stages these changes would need to be larger than they would later. After the plan had been in operation for some time, the farmers would become more sensitive to changes

TABLE 1. HYPOTHETICAL GUARANTEED-PRICES FOR A COMMODITY ASSUMING AN INITIAL PRICE OF \$.80 PER BUSHEL AND 7 PERCENT MAXIMUM PRICE CHANGES

Year	Guaranteed-Price	
	Rising market	Falling market
0	\$.80	\$.80
1	.86	.74
2	.92	.69
3	.98	.64

in price because they would realize more and more that they actually meant something definite. Also the farmers would become more familiar with the alternative uses of their resources. The maximum changes in the guaranteed-prices must be so related to the supplies of the commodities that an adequate stock of each is maintained to protect the consumers and to prevent any unjustified expansion of production. Too high prices can easily do as much or more harm to a sector of the agricultural economy as too low prices. Furthermore, the changes must be small enough to provide a reasonable stability of farm income. It may be difficult to accomplish both the first and the last because they are competitive but a satisfactory balance should be possible. That is, maximum price changes which are large enough to cause the necessary changes in production should not be so great that there would be an inadequate stability of farm income.

In order to illustrate the guaranteed-price fan a set of hypothetical figures will be used. It is assumed that the initial guaranteed-price is \$.80 per bushel and that the maximum percent price change is 7. The results under these conditions are shown in table 1. During the current year or production period the farmers would be



assured a minimum price of \$.80 per bushel. Next year he would know that the guaranteed-price would not be above \$.86 nor below \$.74 per bushel. After three years the guaranteed-price would not be less than \$.64 even though the supply greatly exceeded the demand. If the trend indicated that there is need for a shift in the use of the productive resources to some other commodity, there would be time to make the shift without the waste of resources which accompanies rapid changes. If the demand exceeds the supply, the guaranteed-price would rise but at the end of three years it would not be more than \$.98 per bushel. At best, the production of the commodity would not be expanded beyond the amount which would be compatible with this guaranteed-price. The actual price may be considerably above the guaranteed-price if the government stock of the commodity became exhausted, but there should always be an ample reserve. Without it, the plan cannot be effective. This illustration is not wholly realistic because the effect of the varying size of the government stock of the commodity is not considered.

There are two steps in the establishment of the relationship between the rate of change of the guaranteed price and the stock or reservoir of the commodity held by the government. The first is to set the limits of the government stock desired. The lower limit would be the amount considered necessary to prevent the price from going too high. The upper limit would be the amount above which any more would be only a storage cost and would serve no useful purpose. For purposes of illustration it is assumed that for wheat (including all kinds) these limits should be from 200 million to 300 million bushels. If the stock held by the government should fall below 200 million bushels, the guaranteed price should not be decreased even though the government may have had a net purchase during the year. Also, if it should become greater than 300 million bushels, the guaranteed price should not be increased even though the government had a net sales during the year.

The second step would be to establish the magnitude of the change necessary to bring about the desired adjustment in production. This step is the most difficult one in the development of the plan, and it is very probable that they would need to be revised after the plan had been in effect for some time. In table 2 it was assumed that 7 percent was about the necessary maximum rate of change unless the amount in government storage exceeded 500 million bushels.

TABLE 2. PERCENT CHANGES IN THE GUARANTEED-PRICE OF WHEAT AT DIFFERENT LEVELS OF GOVERNMENT STOCKS

Government stocks Bushels (000,000)	Maximum percent increase in guaranteed-price	Maximum percent decrease in guaranteed-price
0	7.0 cents	0
100	3.5 cents	0
200	0	0
300	0	0
400	0	3.5 cents
500	0	7.0 cents

In the actual operation of the plan it would be necessary to differentiate each commodity according to kind, grade, and place. These kinds and grades would be essentially those which now exist in the different places except that the grade must be such that the commodity can be stored. The number may be reduced if such reduction would not impede the operation of the plan but would reduce the administrative cost. The same general principle would guide the number of places where the government would buy and sell its commodities. This number also would be dependent upon where the commodity is consumed. If it is fed to livestock, the number would be much larger than when the commodity is processed in some factory, for example, cotton. The size of the government stock in relation to the percent changes in the guaranteed-price (table 2) would be broken into place, kind and possibly grade. This might be done by the use of a 5, 7, or 10 year moving-average of the production in the place in question. The use of a moving-average would take into consideration the effect of shifts in production in the different areas.

The selection of the initial differentials in the guaranteed-price for the different combinations of place, kind, and grade is not a serious problem. They would right themselves after the plan had been in operation a few years. For example, if the guaranteed price at Fargo, North Dakota, is too high relative to Lincoln, Nebraska, the government would buy the commodity at Fargo before it would at Lincoln. As a consequence the guaranteed-price at Fargo would drop before it would at Lincoln. Or under a different set of circumstances the government might sell at Lincoln and not at Fargo, thereby increasing the guaranteed-price at Lincoln. Thus, the guaranteed-prices for the different kinds and grades in the different places would become properly adjusted in a short time.

A range between the guaranteed-price and the price at which the government would sell is necessary. It would permit the prices to fluctuate slightly so that the strength of the market is more easily recognizable. Also, it reduces the number of purchases and sales made by the government. Most important reason, however, is that it makes it possible to lower the guaranteed-price without assuring the buyers that they can obtain the commodity at a price lower than the previous guaranteed-price. Otherwise, as the time for changing the guaranteed-price approached and it was evident to everybody that the guaranteed-price would be lowered, the buyers cease to buy. They would wait until the change was made and buy from the government at the lower price. Therefore, in a falling market the price at which the government sells must be at least equal to the previous guaranteed-price.

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## REVIEWS

*The Road to Serfdom*, Friedrich A. Hayek. Chicago: University of Chicago Press, 1944, Pp, xii, 250. \$2.75.

This small volume, its author states at the outset, is simply an expanded version of a pamphlet published some five years earlier in the University of Chicago "Public Policy" series. It is still a piece of pamphleteering—"a political book," Hayek calls it, but with a message "derived from certain ultimate values." Thus it is pamphleteering at its best. "I can discover no reason," says the author, "why the kind of society which seems to me desirable should offer greater advantages to me than to the majority of the people of my country."

The proposition which Professor Hayek seeks to burn into the consciousness of English and American readers may be quite fully stated in a few sentences:

The author . . . has become increasingly convinced that at least some of the forces which have destroyed freedom in Germany are also at work here and that the character and source of this danger are, if possible, even less understood than they were in Germany. . . . Few are ready to recognize that the rise of fascism and nazism was not a reaction against the socialist trends of the preceding period but a necessary outcome of those tendencies . . . Many who think themselves infinitely superior to the aberrations of nazism and sincerely hate all its manifestations work at the same time for ideals whose realization would lead straight to the abhorred tyranny. . . . If we take the people whose views influence developments, they are now in the democracies in some measure all socialists. . . . Is it not possible that if the people whose convictions now give [the "planning" movement] an irresistible momentum began to see what only a few yet apprehend, they would recoil in horror and abandon the quest which for half a century has engaged so many people of good will? (pp. 3-5)

The author has probably weakened rather than strengthened the effect of his book by loosely identifying dictatorship, totalitarianism, socialism, and "planning" as one and the same. At times even "organization" is included. All these divergent forms of political structure and functioning are indiscriminately put beyond the pale of creatively free individualism, which Professor Hayek makes the heart and soul of Western civilization and/or "nineteenth century liberalism." At many places "Western" is made arbitrarily to mean west of the Rhine, although its ingredients are said to include "Erasmus and Montaigne, Cicero and Tacitus, Pericles and

Thucydides" as well as the basic tenets of Christianity. From the liberal pattern of Western life, Germany in particular was cut off by the mere fact that it was occupied by a people peculiarly fitted to elaborate the socialist doctrine, to put it in practice, and to carry it to its logical extreme of fascist dictatorship. In spite of the argument that this happened because the Germans were German, Hayek is deeply alarmed that any active resort to Government as an organizing agent in human affairs will also put non-Germans, and even the sturdiest of Anglo-Saxons and the cross-bred pioneer stocks of the United States, on the swift descent to totalitarianism, from which, after the first few short steps, turning back is extremely difficult if not impossible.

The reviewer, as a notorious defender of private enterprise and one who himself has viewed with alarm some of the more ambitious "action programs" and easy reliance on fiscal policy as the means to economic security, might by some be expected to put himself in full support of Professor Hayek's argument. On the contrary, the book seems to me to be seriously lacking in realistic recognition of many grades of social control that in fact conserve individual freedom. I find difficulty also in accepting as valid his standard of economic purity from which a society must not at all depart if it is to keep from being drawn into the whirlpool of socialism-made-synonymous-with-totalitarianism. Hayek's norm is extreme economic individualism in the *milieu* of a free market operating automatically under the sway of some wholly objective and impersonal law of competition.

It might seem unbelievable in the present day, when both technological and organizational evolution have advanced to the stage that they have, that we should find a full throw-back to atomistic competition presented as both practicable and preeminently desirable. Yet here we find that proposition in cold and unblinking print. Professor Hayek can see no safe and desirable middle ground of intelligently co-operative group organization, primarily private and based on free choices but within the setting of public institutions democratically shaped on the anvil of progressive experience.

If we are rapidly moving toward a state . . . of everything being directed from a single center . . . this is largely because most people still believe that it must be possible to find some middle way between "atomistic" competition and central direction. Nothing, indeed, seems at first more plausible, or is more likely to appeal to reasonable people, than the idea

that our goal must be neither the extreme decentralization of free competition nor the complete centralization of a single plan but some judicious mixture of the two methods. Yet mere common sense proves a treacherous guide in this field. Although competition can bear some admixture of regulation, it cannot be combined with planning to any extent we like without ceasing to operate as an effective guide to production. Nor is "planning" a medicine which, taken in small doses, can produce the effects for which one might hope from its thoroughgoing application. Both competition and central direction become poor and inefficient tools if they are incomplete; they are alternative principles used to solve the same problem, and a mixture of the two means that neither will really work and that the result will be worse than if either system had been consistently relied upon. (pp. 41-42)

One might at first glance think this difficulty happily resolved in the next sentence, since it accepts the idea of "planning for competition." But this easy compromise has to be abandoned as one realizes with every fresh page that the author still means "planning for [atomistic] competition." Even his admirable disavowal of "the wooden insistence of some liberals on . . . the principle of *laissez faire*," while it seems to permit social consciousness to operate usefully in the betterment of legal and administrative institutions should, in the author's view, shape those institutions to the primitive conditions of literal individualism or—one fears, in view of the realities of industrial life—to the "rugged individualism" of the late 19th and early 20th centuries.

Americans must find poignant the author's references to his successive politico-economic experiences in Austria, Germany, and even present-day England. But one gets an uneasy feeling also that the acuteness of his dread of any use of government as a co-ordinating agent suggests traces of shell shock. In the American idiom of Mark Twain, "Did he not get more out of the experience than there was in it?" We in America have every reason to listen to the voice of experience and not let our national youth, our relatively easy economic situation, and our separate geographical position lull us into careless confidence. But Professor Hayek's warnings would probably prove more effective if he did not try to prove too much.

This "too much" touches two points. First, I think he overstates the power of any and all types of social organization to take on the malign form of coercion and become the road to serfdom. After all, you can have even an army—and a highly efficient army—without having the goose-step, the Prussian officer code, or the butcher-boy

behavior of "elite" troops. One cannot appraise fairly the power of America to impose social discipline upon herself without a minority opposing the majority, unless he ponders carefully the native character of our people and the institutions of freedom we have built. Times change surface appearances, but Broadway of 1945 felt immediate kinship with the heroine of *Bloomer Girl* and made spiritual response to its hit song "The Eagle and Me." No less genuinely does it interpret the theme of that other current favorite, "Don't Fence Me In," into the "organized" situations of factory and office and chain store.

I believe the author may hold his darkest fears in abeyance so long as the boys of the Fourth Estate and the radio commentators stand up to be counted as the Patrick Henrys of free speech. He may well study also the position of Wendell Willkie and Senator Vandenburg in the American scene, the make-up of our delegation to the San Francisco Conference, and the fact that we found no difficulty in holding the International Civil Aviation Conference during the closing days of a presidential campaign.

Second, Professor Hayek proves too much as to the need of "going back" to atomistic competition if we are to escape serfdom through socialization of economic life. In spite of his broad historical knowledge, he seems to cherish a quaint idea that perfect competition is a lost Eden, not a figment of the theorist's imagining, and that "nineteenth century liberalism" was a practical achievement rather than a minority crusade. With this false historical perspective, he faces the future with blank disbelief in any possibility of a good society being conducted on a pattern of administered prices, with the administrative agents having trained intelligence and self-restraint or being responsibly controlled by the members of their organizations. Obviously we have not attained perfection or even assured safety under such a system. But may not more good be accomplished by study and education designed to better that performance than by wailing over the admitted horrors of fascist serfdom or rhapsodizing over the beauties of an unattainable competitive automatism? Whoever reads this book might usefully follow with a careful reading of Charles Merriam's *Public and Private Government*.

All this may seem remote from agricultural economics. But every agricultural economist who has watched the growth of agrarianism in the last few decades and particularly the emergence of the Fed-



eral Farm Board, the Agricultural Adjustment Administration, the FCA, the REA, and other regulatory and action developments will find in it much that he can readily translate in terms pertinent to his particular field of work. This is true also of those whose special field of interest concerns the "voluntary" agencies of the co-operative movement. It may well give pause to those who have been disposed rather uncritically to ride "the wave of the future" and who think that the tough problems of agriculture can be solved by the short-cut method of turning them over to the central government. But it would be of still more use if it stimulated agricultural economists to struggle harder to demonstrate that it is possible to adjust the economic lives of farmers and of their organizations soundly—and without loss of independence—into the functioning of an advanced industrial society.

EDWIN G. NOURSE

*The Brookings Institution*

*The Reconstruction of World Agriculture*, Karl Brandt. New York: W. W. Norton and Company, 1945. Pp. viii, 416. \$4.00.

Here is a most timely book on a topic of vital, current interest by an author who has had unusual opportunities for obtaining a broad perspective of the problems with which it deals. Dr. Brandt's training in agricultural economics in Europe and his experience as a member of the faculty of the University of Berlin and as the director of the German Institute of Agricultural Market Research have given him first hand contacts with economic aspects of European agriculture. His broad and varied experience on this side of the Atlantic since coming to America has rounded out his preparation for the task. His acquaintance abroad and his connections with the Food Research Institute have aided him in tapping sources of information regarding European agricultural conditions during war which are not accessible generally. The high expectations which these considerations warrant are well met by this volume.

The first three chapters review the effects of the last world war and trends during the two decades between wars. Dr. Brandt's critical review of inaction or improper action after World War I and during the depression is worth careful study as an aid to effecting improvement in future policy.

The analysis of the developments during the present war represents a real contribution to the published material available on

this subject. Many Americans are prone to think of Europe as an area heavily dependent upon overseas food supplies, overlooking the fact that the continent has surplus as well as deficit areas. The author shows how the conquests by Germany enabled the Nazi to integrate and reorganize the agricultural production of various parts of Europe to increase its self-containment. This analysis includes an interesting, areal classification of Europe into "rings of supply." It is on the basis of this appraisal that the author has held consistently throughout the war to the view that "the Axis cannot be defeated by food shortage, but must be defeated on the field of battle" (page 118). This is reaffirmed in a subsequent statement that "neither Hitler nor Tojo and their gangs will lose their war because they run short of food. They will lose their war precisely as the Central Powers lost World War I, by a crushing military defeat in battle" (page 197).

Food requirements and adjustments during the demobilization period are considered next. Relief needs are presented and considerable attention is given to the functions and operations of UNRRA. In appraising prospective needs, the author comments that "it is utopian to approach the question of European relief requirements from blueprinted standards of nutrition" (page 201). He goes on to say "The only approach to a practical compromise on the definition of 'requirement' is to proceed from the habitual annual food consumption in normal times and the food imports during such periods."

The last four of the ten chapters are concerned with agricultural policies and adjustments for the future. Basic issues are reviewed. The importance of world trade is developed in some detail. Some readers may feel that Dr. Brandt underestimates the obstacles to a gradual but significant reduction in trade barriers but students of the problem will share the hope that this will be accomplished. He is realistic in recognizing that public policy cannot be unmindful of vested interests which restrictions have fostered.

The author does well in reminding Americans of the responsibility which rests upon this country as the leading power in the world. He says that "If America does not live up to the obligation of bold leadership involved in the position she acquired in World Wars I and II, she will sooner or later lose her position by default" (page 307). The general conclusion with respect to international commodity agreements is that "Political agreement on export quotas can

never fully maintain the beneficial effects of international trade on the basis of comparative advantage and competitive price" (page 317).

The titles of the closing chapters, "Orientation for Reconstruction" and "Reconstruction in Selected Countries" suggest the type of problems to which they devote attention. The farmers' interests in nonagricultural activity and employment and in improved nutrition are recognized. The importance to agriculture of the political and economic future of Europe is pointed out. The need for coordination of economic policy on the continent if planning to satisfy national groups is to be avoided is made clear. The author's concern over the narrow selfishness which so often dominates pressure groups certainly is justified.

This book must be accorded a high ranking in the literature relating to agricultural policy. It deserves close reading and careful study by agricultural economists, farm leaders and all others seriously concerned with agricultural welfare and sound farm policy.

O. B. JESNESS

*University of Minnesota*

*Economic Problems of Latin America*, Edited by Seymour E. Harris.  
New York: McGraw-Hill Book Company Inc., 1944. Pp. 465.  
\$4.00.

This very timely book on current economic problems of Latin American countries includes chapters by seventeen economists. Edited by Seymour E. Harris who also contributes three chapters, this book brings together in one volume an analysis of current economic developments and problems of Latin America by economists who have had the opportunity of traveling and studying problems in these countries.

The book is divided into three parts. Part I is an introduction by Seymour E. Harris in which he discusses some major issues including the relatively low standard of living and the dependence of Latin American countries on trade with foreign nations. Problems of price stabilization, labor problems, scarcity of capital and other major problems are mentioned and briefly analyzed.

Part II, under the title "General Considerations" contains seven chapters. A chapter on "Economic Problems of the Latin American Republics" by Frank A. Waring includes a valuable discussion and statistics on foreign trade of Latin American republics. "War

and Postwar Agricultural Problems of Latin America" are analyzed in a chapter by L. A. Wheeler. Trends in the production and exports of leading farm products are discussed. Robert Triffin in a chapter on "Central Banking and Monetary Management in Latin America" outlines the present central banking structure in Latin America and makes several suggestions for improvements in monetary management. "Fiscal Policy and the Budget" is the subject of a chapter by Henry C. Wallich. Customs and internal excise taxes provide most of the revenue of the governments. Corporate and income taxes provide only minor revenues. The heavy dependence on foreign trade makes it difficult to stabilize the economy by fiscal means. In two chapters, one on "Price Stabilization Programs in Latin America" and another on "Exchanges and Prices," Seymour E. Harris presents an excellent analysis of inflation control in the Latin American countries. Price control has not been successful on the whole, and inflation is a very serious problem. Exchanges have been controlled and the techniques and effects of such controls are outlined. "Inter-American Trade Policy" by Henry Chalmers is the concluding chapter of Part II. This chapter includes a fine general historical summary of proposals and programs for promoting trade between the United States and Latin American countries. Increased purchases of Latin American commodities by the United States during the war has maintained the export trade. Fuller and freer trade among all American countries is the objective of many policies which have been proposed.

Part III includes the following special country studies: Argentina by Miron Burgin, Bolivia by William A. Neiswanger and James R. Nelson, Brazil's Economy in the War and After by Corwin D. Edwards, Chile by P. T. Ellsworth, Columbia: with Particular Reference to Price Control by Ben W. Lewis and Henry Beitscher, Cuba: Sugar and Currency by Henry C. Wallich, Haiti by Don D. Humphrey, Mexico: with Special Reference to Its International Economic Relations by Norman T. Ness, Paraguay: with Particular Reference to Price Control by George R. Taylor, and Venezuela by E. G. Bennion.

The ten countries discussed under Part III include 80 percent of the population and 90 percent of the area of Latin America. In general the discussions include a description of the resources, production and trade of the countries and an analysis of current economic problems including the impact of the war upon the economy.

At this time, when there is a growing interest in the problems of Latin American countries, this book meets a need for information on current economic developments in these countries. The reader will find some repetition which perhaps is unavoidable in a book with chapters written by several persons. However, the material on the whole is presented in a clear logical manner. Current developments and policies in Latin America are subjected to careful economic analysis by experts in various fields who have had close contact with the problems discussed. This makes "Economic Problems of Latin America" particularly valuable as a text and reference in college courses dealing with economic developments and economic problems of Latin American countries.

E. C. JOHNSON

*United States Department of Agriculture*

*The Production Credit System for Farmers*, Earl L. Butz, Washington, D.C.: The Brookings Institution, 1944. Pp. vii, 100. \$1.00.

This book covers the legal foundation and is a statistical and analytical discussion of developments during the first ten years of production credit under the Farm Credit Administration, created by Executive Order of the President in May 1933. It deals specifically with (1) The Production Credit Division of the national Farm Credit Administration; (2) the twelve Production Credit Corporations, one in each FCA district; and (3) the more than 500 production credit associations organized to serve the production credit needs of qualified farmers throughout the country. The origin, functions, financing, growth, sources and amount of incomes, and the progress of the Production Credit system toward farmer ownership are examined in the first four chapters. In the last four chapters, attention is focused on how well the system has fulfilled its mission, the amount of federal subsidy used, the effects of the subsidy and the outlook for its reduction or elimination. Current operating problems and criticisms that the Production Credit system is an undesirable extension of activity into the banking field and that federal subsidy constitutes unfair competition with commercial banks receive major attention. It is recognized that "money spent by government in promotion of the general welfare must, in its final impact, subsidize someone whose position in the competitive struggle would otherwise be less favorable."

Conditions in the early 1930's which were the occasion for gov-

ernment subsidy of the Production Credit system, were the collapse of credit in rural banks and the lack of local points of contact through which the loan facilities of the intermediate credit banks and regional agricultural credit corporations were available to the average farmer. After the credit collapse of 1929-33, farmers did not have the capital necessary to set-up discounting organizations without material financial support. The Production Credit system was established by Congress for the purpose of making short-term credit available to farmers on a permanent basis in a form adapted to the varying productive processes, and at the lowest rate of interest consistent with sound business principles. Dr. Butz maintains that it was never the intention of Congress or of the FCA to regard the credit associations as "emergency institutions whose operations would be terminated or restricted with the passing of the agricultural emergency during which they were born." On the contrary, the system was intended to be "another credit system designed to serve the peculiar and continuing production credit needs of agriculture."

One of the special merits of the book is the inclusion of considerable factual data not readily available, with regard to the relation of subsidies to the capitalization, earnings, loan fees, interest rates, etc. of production credit associations. In addition to information currently published, these data are necessary for analysis and evaluation of PCA operations. The percentage of capital stock owned by members increased from 9.9 percent in 1935 to 26 percent in 1943. In 1935 the government had invested in A stock \$76,802,550 and in 1943, \$75,770,460. During the same period, legal reserves and surpluses of the associations increased from 3.5 to 27.9 percent of total capital. The volume of loans increased from 107 million dollars in 1934 to 501 million dollars in 1943, but the number of loans, nearly 246,000, reached its peak in 1937. In 1943, the associations made loans to about 7.5 percent of all United States farmers that used production credit. Losses have been small during the first ten years of operation (0.16 percent of total cash advances). The tendency of some associations to "live up" income from member and from government owned capital is noted, but substantial progress has been made in building production credit associations capable of supporting themselves. Sixty-three percent of the associations were operating within member income (before losses) in 1943.

In an appraisal of the job done by the Production Credit System, Dr. Butz concludes the system provides short-term credit in the form necessary to meet the peculiar needs of qualified farmers at a reasonable cost in all areas, whereas adequate credit had not been available before at any cost. It is in a position to continue furnishing credit under all sorts of business conditions, because its loan fund is not subject to withdrawals by depositors, and in addition, it has access to the money markets of the country. The subsidy is justified as necessary to nurture the Production Credit system through its foundling years, and the competitive effect is said to be less serious than is sometimes alleged. The aggregate benefit of the system is many times the value of the Treasury subsidy. "The real threat to commercial banking inherent in the subsidy is not so much the amount of the past or present subsidy, but the philosophy underlying continuous subsidy and the genuine danger that it may be extended to the point where both private and cooperative credit institutions will be forced out of the farm loan field."

In the last chapter, entitled "Can the Subsidy be Removed?" the author points out that Congress contemplated that the production credit associations would, after a reasonable period, become independent local cooperatives, but continue to enjoy the benefit of an overhead service organization maintained at least partly by government expense. It is shown that many of the PCA's are now in position to retire most of their government capital and in a few cases this has been done. If the associations located in high cost loan areas were permitted to adjust their interest rates and loan service fees in line with costs, more rapid progress could be made. However, a few associations located in sparsely settled regions, high risk areas, or districts having small loans may never be able to live within member income. "If the decision is made to rely permanently on the subsidy in such areas, the system can never be entirely farmer-owned and farmer-controlled and the pressure will persist always to include additional marginal areas in the subsidized group."

It is recommended that a definite program be set up and followed for retiring government capital in the production credit associations. Since this is an administrative problem, criteria for a retirement program "which should be helpful in gauging the extent and rapidity of retiring government capital" are proposed and discussed, but not the program itself.

Your reviewer is impressed by the amount of pertinent information contained in this 100 page book, and especially by the logical order of presentation and penetrating analysis. With regard to controversial issues, the exposition is sufficiently tolerant to leave some basis for the contentions of critics of the Production Credit system. The author does not hesitate in most instances to take a positive stand, but his proposals do not have an air of finality. Certainly his analysis suggests many questions which farmers, students, bankers, and all persons interested in the public welfare should consider carefully in order to decide wisely the principles to be followed in the broader field in which the Production Credit system is a small but significant sector.

BUEFORD M. GILE

*University of Louisiana*

*Bread and Democracy in Germany*, Alexander Gerschenkron.  
Berkeley: University of California Press, 1944. Pp. 289. \$2.75.

This scholarly study has been oriented toward an eminently practical goal: to contribute a workable treatment for the problem of the German Junkers in the future peace settlement. Its main value and accomplishment lies, perhaps, more in analyzing the economic position and economic policies of the Junkers and conveying factual information about certain phases of the agricultural policy under the Weimar Republic, than in its realistic recommendations to the statesmen who will write the peace.

Since the history of Germany's hereditary manorial élite, the Junkers, is almost inextricably interwoven with the fabric of Germany's history, the author had to tackle a task all the more formidable because the series of research studies (published under the direction of Professors J. B. Condliffe, Stuart Daggett, Howard S. Ellis, E. T. Grether, and Paul S. Taylor) in which it appears limited the space to less than 200 pages of text. Yet, while it cannot dig very deep, the book states the author's findings and theses cautiously and well.

The first part traces agricultural protection in the Reich since 1871 in its global contours; the second deals with the maneuvers of the Junkers against the Republic, while the third part drafts suggestions for the peace.

This reviewer does not find it difficult to give the author all the credit due, but he finds it hard to overlook the fact that in spite of



the impassionate, detached, and scholarly presentation, this book is afflicted with the ailment common to so many books of these war years. The book's underlying thesis is that since the Franco-Prussian War, Germany has pursued policies of agricultural protectionism; behind this protection stood the Junkers; agricultural protectionism and militarism went hand in hand; in order to break militarism one must break protectionism, and in order to break protectionism, one must break the Junkers.

This reviewer has always considered the political, social, and economic privileges of the Junkers in modern Germany to be an anachronism and the root of the corruption of democracy, and in Germany wholeheartedly participated in the struggle against its perseverance, with the acknowledgment of immediate dismissal by the Junkers when they joined Hitler's cabinet in 1933. Thus he has no quarrel with the author's attitude. Yet he feels that Dr. Gerschenkron failed to ask a great many questions which might have embarrassed him. However, while they would have made the going harder for him, his book would have gained immensely. It would have become much more convincing by having obtained the depth which serious doubt and self-criticism usually adds to the presentation of thought.

Writing in the United States, where protectionism is traditional and of longest standing, and the country with high protection for agriculture in spite of creditor and exporter status, the author might have asked whether it is really true that agricultural protectionism is an exclusive congenital Junker obsession or invention; or why, in the United States protectionism had nothing to do with militarism. Why have France and Switzerland both been protectionist countries for the same length of time Germany was, yet without having Junkers? And why were the Prussian Junkers as late as the sixties of the last century as hardheaded free-traders as they later became protectionists? Why did not the English Tories or the landed gentry create the problem in Great Britain that the Junkers do in Germany? Why did the United States absorb its "Junkers," the plantation-owning aristocracy of the South, into the democratic society?

Dr. Gerschenkron states correctly that the Social Democrats, i.e., essentially the Marxian labor unions, cooperated with the Junkers in shaping the food autarchy policy and in building a powerful governmental monopoly administration for agricultural

markets, but he does not show the reader that labor fortified the economic position of the Junkers in spite of its Party platform of Kiel because Dr. Baade and his labor colleagues felt that they could outsmart the Junkers by converting the entire German economy into a system of state monopolies controlled by a labor majority. The whole chapter on the Junkers vs. the Weimar Republic suffers from the fact that it relates the exploits of the Junkers as if these masters of intrigue operated in a pleasant sort of vacuum. In fact, however, the Junkers were almost broken economically by the Weimar Republic, while labor and all anti-militarists lost the Reichswehr, the government's chief means of political force, to the Junkers by default. Socialists and liberals, young and old, considered it beneath their dignity to enter the ranks of the officer corps of the army, leaving the despised jobs to the Junkers.

The reader of *Bread and Democracy in Germany* might conclude that if all the Junkers had been "liquidated" in 1919, Germany and the world would now be at peace. This, however, is extremely doubtful, not because all the Germans were always plotting for war, but because a sufficient degree of social and economic distress will invariably give political gangsters and men of violence ideal opportunities for their exploits, particularly if during the years of depression, democracy has deteriorated internally.

There are many more pertinent test questions which remain unposed, and thus many more good reasons for the author's own theme are omitted. He suggests as a solution the expropriation of the Junker estates at one stroke, and the adjustment of German agriculture to the production of more animal products with grain imports under the auspices of an over-all state monopoly handling imports, exports, and domestic price-fixing. He does not prove his point that large-scale farming with hired labor is in itself detrimental to peace and welfare, and if not, how one shall exclude the Junkers from managing such farms.

The first part of the suggestion, the dissolution of the Junker estates, would be almost non-controversial if the political and economic future of Germany were slightly more discernible than it is today. Even then, however, the suggestion for separating the Junker class from its position of economic privilege is merely stating a desirable goal. The trouble begins when that expropriation act has to be executed and the complex social, economic, and technical problem has to be tackled. If the change does not come

by revolution but by legal reform, the technical procedure may again easily be the method of frustration.

As to the suggestion of operating a national agricultural state monopoly, this reviewer questions not only the wisdom of such a policy, but also the propriety of ending an otherwise thoughtful and cautious book by quietly rolling in front of the reader, without further comment, a carload of dynamite, leaving him with embarrassed speculation and mixed sentiments. To overcome these feelings the reader may want to turn to Hayek's momentous book, *The Road to Serfdom*.

These critical comments notwithstanding, the book is recommended as challenging material for seminar discussions for graduate students, and to all "students" of the German problem in general.

KARL BRANDT

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*The Wealth of the Nation*, H. Clyde Filley, Lincoln, Nebraska; University of Nebraska Press, 1945. Pp. X, 174. \$2.00.

Professor Filley points out in his preface the widespread popular interest in economic problems and the general lack of dependable information about them in forms suited to the needs of the lay reader. Certainly there is need for more books on economic principles that are suited to such audiences and for use in high schools. To do an adequate job on such a book is no easy task, however, and the writer of this book does not seem to this reviewer to have accomplished it. It is easy to agree with the statement (p. X) that "the book contains little that is new," but most economists who have read much of the economic literature written since 1850 will be skeptical of the statement that "It merely assembles in one place concrete data which support well-established economic theories."

The central theme, if there is one, is that "The only way by which higher living standards for the masses can be obtained is to increase the production and improve the distribution of necessary commodities" (p. 64). No one will disagree with this simple proposition, but nearly all students familiar with recent studies of economic relationships will disagree with the conclusions as to how those desirable ends are to be achieved.

The author indulges in a good many homilies on the order of

those in Poor Richard's Almanac. The nineteenth century virtues of thrift, hard work, honesty, and long hours are extolled, and apparently nearly all American pioneers are assumed to have possessed them. But there is little recognition of the fact that, under present day conditions, these virtues may not prevent the worker from being thrown out of a job, the farmer from losing his markets, or the economy as a whole from going into a tailspin. There is no comment on the fact that over-all savings may be made at too rapid a rate and that consumer buying power may be inadequate to keep productive resources in full use. The implied solution, when buying power declines, is to reduce prices and wage rates, but the probable interaction of these on consumer buying power is not discussed. High wage rates are considered a major difficulty. However, no distinction is made between wage rates and wage costs. High taxes are an unmitigated evil and, except in wartime, a result of bad management regardless of the uses to which they are put. "Governments are perpetual beggars." The corollary of this is, of course, that in areas like India, China, and some of our own states where taxes are low we may expect the most prosperous economies.

Apparently gold is considered the only satisfactory measure of the value of money. This implication appears repeatedly but with no discussion of what constitutes the value of money. "The issuance of paper currency which cannot be redeemed upon presentation (presumably in gold) is really a forced loan without interest" (p. 50); "One of the most common causes of inflation is the issuance of paper money in such large quantities that it cannot be redeemed in gold" (p. 100); "So far as history records, gold has been the most nearly satisfactory measure of value that has ever been used" (p. 151).

The main chapter, chapter IX, entitled "The Road to Poverty," presents a puzzling treatment in which the economics of individual activities is applied rather indiscriminatingly to the economics of national activities. The reader is tossed about somewhat casually from a three-paragraph discussion of "wild life" to a following single paragraph on the thirty-hour week and a succeeding short paragraph on limitation of the amount of work a laborer may perform in a day.

All in all it is the kind of book most everyone feels inclined to write at one time or another; one in which he can express opinions and air prejudices without the tedious necessity for relating them

to the prosaic "facts of life," or of bringing them into orderly sequence. To say, as the publishers do, that "The Wealth of the Nation is not too unlike its prototype by Adam Smith" would seem to be a masterpiece of overstatement.

M. R. BENEDICT

*University of California  
Berkeley*

*The Cambridge Economic History of Europe from the Decline of the Roman Empire: Vol. I, The Agrarian Life of the Middle Ages*, Edited by J. H. Clapham and the late Eileen Power. Cambridge: The University Press. New York: The Macmillan Company, 1944. Pp. xvii, 750. \$7.00.

This is the first volume of yet another *Cambridge History*. It was in 1899 that Lord Acton planned the *Cambridge Modern History* as a series of twelve large volumes, with each chapter written by a specialist on the subject. The success of that pioneer venture led to other historical series—the Medieval, the Ancient, the British Empire, India, English Literature and American Literature. In all, the total score is over fifty volumes in forty years, and if there is not a bedside book among them there is not a single serious disappointment to scholars.

Acton died in 1902, and his kindly shades were probably a little disturbed when he heard there was to be a series on economic history. For in 1902 economic history had scarcely taken on a distinctive shape. It was still in its first generation of teaching and research, and too much dominated in its consciousness by the controversies of the constitutional historians, the quarrels between deductive and inductive approaches to economics, and the slogans of the class strugglers. Since those days the second and the younger members of the third generation have gone far, exploring new fields, unearthing new types of material, and developing new techniques. The subject can now stand on its own merits, and does not have to try to justify its existence either as a provider of illustrations for the advocates of the economic interpretation of history or as a discoverer of examples to buttress neo-classical or paleo-classical economic theory.

The plans for the *Economic History* took shape during the nineteen-thirties, years which were not friendly toward projects involving international scholarly cooperation. I know nothing that more

grimly illustrates the impact of the last ten years on academic work than Clapham's quiet description of the fate of his collaborators. The writer of the keynote Chapter I was a professor in Breslau who had to transfer himself to Jerusalem. The Italian who was to write about his country "was unable to deliver the MS." He was replaced by a Dane, who "unexpectedly died." His successor was a Finn, who finished the job and was last heard from "somewhere in Finland" in late 1939. The Spanish contributor sadly threw up his task because he was a refugee in Santander and his notes were in Seville. "There has been no later news of him either." Of the Pole "all that can be said with certainty is that he cannot be at his University of Poznan." What has happened to two Russians who had found refuge in the University of Belgrade "we do not know." To crown this list of disasters it need only be added that Eileen Power, one of the greatest medieval scholars of our time, completed her editorial work and then dropped dead in the doorway of a London store; and that a great part of the first British printing was destroyed by "enemy action" in 1941. The British editions have been printed on poor paper, but the American edition which appeared last year is on paper of far better quality.

To readers of this JOURNAL the outstanding merit of this volume lies in the fact that here for the first time—in any language, so far as I know, we have the early agricultural history of all Europe. In the past, medieval rural society has usually been treated by describing "the typical manor," and letting it go at that. This was as improper as it would be to describe a Virginia plantation or a New England forest clearing or a Kansas wheat farm or a bit of dust-bowl and then say, "That is the American rural landscape." The manor was not fully representative of all England, and it certainly could not be expected to serve as a good economic, social, and political pattern for all parts of Europe. Conditions of soil and climate and contour, of history and traditional customs, of terrain and techniques, of methods and of marketing opportunities, of old-established settlement or of recent pioneering invasion, all these and many more factors have to be considered; and it is only within recent decades that the economic historian has given them due attention. Even today his interests may be confined to what he can see in documents,—to lords and serfs and social institutions; but in an increasing number of cases he has gone out and got mud and manure on his boots, with highly fertilizing consequences.

These two features—the continental survey and the attention to farming conditions—characterize much of the volume. To them can be added a third. It would be hard to say how far our American “frontier theory” has influenced European scholars; but it is true that they have tried to start out with a Europe that was unoccupied over vast expanses. Hence the first chapter fittingly deals with “the settlement and colonisation of Europe,” and many later sections look at men migrating to the European frontiers centuries before their descendants moved to the American edge of settlement. The second chapter deals with agriculture and rural life in the later Roman Empire and the third is called “The evolution of agricultural technique.” Finally, when we have looked at every part of Europe, studying medieval agrarian society “in its prime,” the story of that society “in transition” is told not merely in terms of the changing systems of tenure and government but also in relation to the effect of wider clearings of land, of the growth of a money economy, and of developments in methods of production or marketing.

When the book first appeared in 1941 its editor and publisher could offer little hope that the remainder of the series would see the light for many years to come, or would ever appear at all. Come the deluge if it must, at least Volume I was out, and was complete in itself. Today that grim outlook has been in part dispelled, and Sir John Clapham finds time to think about the possible treatment of the modern story. But there are still two more medieval volumes to appear, and only a few chapters had been written for them by 1939. Whether the team of scholars who were doing the work “can be brought together, or replaced, and when, one cannot yet tell.” We may earnestly hope that they can be. Meanwhile the appearance of the first instalment is an event of first class importance to all who are interested in the history of agriculture—and in the story of human courage.

HERBERT HEATON

*University of Minnesota*

*Demobilization of Wartime Economic Controls*, John Maurice Clark.  
New York: McGraw-Hill Book Company, Inc., 1945. Pp. xii,  
219. \$1.75.

This is the third of the research studies of the Committee for Economic Development into problems of the transition from war to peace. Inevitably it covers more ground than the title indicates, for it is impossible to discuss the demobilization of controls without

many side glances at the whole problem of the transition. With the general moral of the book—that controls should not be lifted until the need for them has disappeared, and that the need for controls is likely to last for a considerable period after the conclusion of hostilities—few will disagree. Many valuable practical proposals are set forth, relating to such items as the termination of contracts, the disposal of plants, rationing, controls of manpower, price and wage control, and so on. The problem is considered from the point of view of three broad periods: the period of future fighting, the initial postwar conversion, and what the author calls the “catching-up” period, when the unfulfilled demands of the present are made good. This is followed by a glance at “controls in a longer perspective.”

Any work of this type is bound to suffer from a plethora of “ifs and ands,” and the attempt to present all possibilities fairly can easily lead to a morass of doubtful alternatives where the reader flounders helplessly. The presentation unfortunately suffers even more from this defect than seems to be necessary. The book would have been much improved if the author had had a clearer view of his reading public. Those who are familiar with the problems involved will find much of the work trite. Those who are not familiar with the problems will find great difficulty in following the argument in many places, because the author assumes that the reader has a good deal of specialized knowledge at the start. The reader who is not familiar with the present operations of wartime controls will emerge with no clear picture of what it is that has to be demobilized. What is the use, for instance, of saying (on p. 87) apropos of allocating quotas to pre-war producers. “The figures for the domestic laundry equipment industry are very instructive on this point,” without giving the figures? Is the reader supposed to carry this titbit of information around in his head? Surely, also, the book should have been pruned of such gems of platitude as the sentence on p. 134: “Disposal of plants by sale or lease should be as speedy as is consistent with due deliberation, wrong disposal being a serious matter.”

There is practically no discussion of agricultural problems, apart from an occasional cursory paragraph, which would seem to be a serious omission, for here, more perhaps than in any other area, the immediate post-war patterns have been already set by congressional action.

K. E. BOULDING



*Readings in Business Cycle Theory.* Selected by a Committee of the American Economic Association. Philadelphia: Blakiston & Company, 1944. Pp. xvi and 494. \$3.75.

This volume, second in a series of republished articles in economics (of which the first was "Readings in the Social Control of Business," 1942), is designed primarily for teaching graduate and advanced undergraduate courses. The selection of articles is such, however, that professional economists who wish to keep abreast of developments in fields other than their own can scarcely afford to be without this volume. Here, for example, we find a brief presentation by their exponents of the cycle theories which have come to be associated with such well-known scholars as Wesley Mitchell, Schumpeter, J. M. Clark, Hayek, Hansen and Hawtrey. Here, too, is a penetrating synthesis of recent trade cycle controversy by D. H. Robertson, whose remarkable ability to get to the core of things has long been recognized. While Lord Keynes does not appear as a direct contributor, his ideas and the controversy which they have provoked are, at least, a point of departure for the selections in two of the central portions of the book.

The plan of the book was to select outstanding contributions to cycle theory without special reference to the time when these contributions appeared. Actually, this selection carried the committee back to 1917, when J. M. Clark first elucidated his famous principle of acceleration and forward to 1941, with the publication of John H. Williams' penetrating, though rather gloomy comments, on the efficacy of deficit spending. Wesley Mitchell's original exposition of his well-known pattern of the business cycle was in 1913, though the particular exposition chosen for this volume appeared somewhat later. For the United States, at least, Mitchell was a pioneer in the field of cycle research.

After Part I, which deals with an over-all picture of the business cycle, and contains compact presentations of the points of view of Schumpeter, Kondratieff, Mitchell and Tinbergen, the book comes quickly to two sections which were largely born of the writings of Mr. Keynes, particularly in the *Treatise on Money* (1930) and then in the *General Theory of Employment, Interest and Money* (1936). The first of these sections summarizes the famous investment-savings controversy of a few years ago. The second deals mainly with the impact of Mr. Keynes on public policy, being concerned with the multiplier and acceleration principles (the latter being Clark's

contribution) and their implications for government spending.

From the vast literature on the savings-investment controversy, the Committee selected four articles. One, by Ohlin, summarizes the approach of the Swedish school, two are designed to clear up definitions, assumptions and objectives of the various major contestants (these are by Friedrich Lutz and A. P. Lerner) and the last is the celebrated Lange article of a few years ago on "The Rate of Interest and the Propensity to Consume." This article accomplishes three main things: (1) it presents the essentials of the Keynesian system, giving the rate of interest a more important role to play (2) it indicates that many of the elements of the Keynesian system were present in the Walrasian system of general equilibrium (3) it defines the theoretical conditions under which the optimum propensity to save (or alternatively, optimum propensity to consume) may be determined and indicates some implications of this for monetary policy.

In the section on the multiplier, acceleration principle and government spending, the "usability" of the multiplier concept for public policy is critically examined in a number of excellent articles by Fritz Machlup, Paul Samuelson and J. M. Clark and others.

Although, as the Committee points out in the introduction, "monetary theories of the business cycle are no longer so much in vogue as they were ten years ago," a section is included which contains Mr. Robertson's acute analysis, already referred to, which extends beyond the monetary field itself, and clear representations of the theories for which Hawtrey and Hayek have come to be well-known.

The book concludes with two short sections, one on under-consumption and secular stagnation, the other on special commodity cycles. The first of these contains, among other articles, the best short account of the views of Alvin Hansen which is in print. The last is simply Ezekiel's well-known "Cobweb Theorem" outlined a few years ago. Professor H. M. Somers has compiled an exhaustive bibliography at the end of the book. Readers are informed that the next volume of republished articles will deal with distribution and the national income and are invited to send in suggestions for future volumes to the secretary-treasurer of the American Economic Association.

EDWARD D. ALLEN

## NEWS NOTES

R. L. Adams, Professor of Farm Management at University of California, is on leave of absence until June 30, 1945. He accepted the directorship of the California Farm Production Council for the period August 1, 1944 to June 30, 1945.

Norris J. Anderson, formerly associate professor at Kansas State College, has returned to his former position after a period of employment by a bank in Colorado.

Lieutenant William E. Bell, on military furlough from his position as Agricultural Economist on the staff at Upper Darby, Pennsylvania, has been reported a prisoner of war in Germany.

William Bredo, formerly Agricultural Economist, Distribution and Planning Branch, Commodity Credit Corporation, War Food Administration, has transferred to the Division of Marketing and Transportation Research as Agricultural Economist.

W. M. Bristol, graduate of the University of Connecticut, and formerly with War Food Administration as Milk Marketing Specialist, Office of State Milk Administrator, State of Connecticut, is now Assistant in Agricultural Economics, Agricultural Experiment Station, State College of Washington, Pullman, Washington.

H. C. M. Case, head of the Department of Agricultural Economics, University of Illinois, is now in London, England, with the agricultural planning division of the United Nations Relief and Rehabilitation Administration.

Orvel H. Cockrel, formerly Agricultural Economist, Division of Marketing and Transportation Research, resigned to accept a position as teacher of agriculture under the Smith-Hughes Act at Caneyville, Kentucky.

Ralph L. Dewey, Principal Transportation Economist in the Marketing Facilities Branch of W.F.A., resigned April 1 to accept a position as Professor of Economics in charge of teaching and research in transportation in the Department of Economics and Sociology at Iowa State College.

R. C. Engberg has been appointed Chief of the Economic and Credit Research division in the Farm Credit Administration, Kansas City, Missouri. Dr. Engberg was formerly Director of Research in the Farm Credit Administration of Omaha.

Delbert R. French, formerly Price Analyst, Services and Foreign Trade Price Division, Office of Price Administration, has transferred to the Division of Marketing and Transportation Research as Agricultural Economist.

William A. Green, a veteran of this war, has been employed as Agricultural Economist with headquarters at Lincoln, Nebraska. Mr. Green is a graduate of the University of Nebraska.

Lt. Colonel H. W. Hannah, on leave from his position as assistant professor of agricultural economics, University of Illinois, was severely wounded in Holland, while on active duty as operations' officer of the 82 Airborne Division. He is now in Billings Hospital, Fort Benjamin Harrison, Indianapolis.

Harvey W. Hawthorne, Agricultural Economist in the Division of Farm Management and Costs, Washington, D. C., retired at the end of January after 31 years of continuous service in farm management research. Mr. Hawthorne expects to complete summarization of the labor costs in relation to total costs as reported in State and Federal publications.

Robert R. Hays, Agricultural Economist, has transferred from the Appalachian regional office to the Federal Crop Insurance Corporation at Washington, D. C.

Hugh A. Johnson has resumed work in the Division of Farm Management and Costs, after a year at the University of Delaware and is stationed at the Division's regional office in Milwaukee, Wisconsin.

Arthur B. Jebens, who prior to his transfer to the Federal Housing Authority was a Legislative Analyst on the Washington staff, has been reported missing in the European theatre.

Phillip E. Jones, Agricultural Economist, has been transferred from Atlanta, Georgia, to Albuquerque, New Mexico.

William Kling, formerly Agricultural Economist, Distribution and Planning Branch, Commodity Credit Corporation, War Food Administration, has transferred to the Division of Marketing and Transportation Research, as Agricultural Economist.

Howard W. Mayne, Agricultural Economist at Milwaukee, resigned last September to enter the Armed Services. He is now with the Army Air Corps.

Lt. (j.g.) William F. Musbach, on military furlough from his position as Agricultural Economist on the Washington staff, died January 21 at the Naval Hospital, Bethesda, Maryland.

Aaron G. Nelson, recently Agricultural Economist in the Division of Farm Management and Costs at Washington, D. C., has been appointed Director of Research, Farm Credit Administration, Omaha, Nebraska (effective April 16, 1945).

Alvan D. Oderkirk resigned from his position of Assistant Professor of Agricultural Economics at Iowa State College March 1, to engage in a commercial poultry project near De Kalb, Illinois.

Frank Robotka of Iowa State College is temporarily at the Brookings Institution, Washington, D. C., under a collaborative arrangement be-

tween the two institutions, to continue work on a study of the economic nature of the co-operative form of business organization.

Stanley K. Seaver, Assistant Professor in Agricultural Economics, University of Connecticut, is on leave of absence to work for the War Department in Washington, D. C.

Geoffrey S. Shepherd, Professor of Agricultural Economics at Iowa State College, received a five months' leave of absence beginning March 1 to accept a temporary position of Chief Economist for the Food Price Division of O.P.A. in Washington, D. C.

Irving A. Spaulding has been appointed to the position of Associate Rural Sociologist in the Department of Agricultural Economics and Rural Sociology at Clemson College, Clemson, South Carolina.

Henry H. Stippler, Agricultural Economist, is now representative of the Division of Farm Management and Costs at the Portland, Oregon, regional office.

J. M. Tinley of the Giannini Foundation and Division of Agricultural Economics at the University of California has been promoted to Major. He is now in London, but has seen service in Holland, France and other countries on the continent.

Elbridge A. Tucker, Agricultural Economist, Division of Farm Management and Costs, is now located at the Division's regional office of Berkeley, California, by transfer from Atlanta, Georgia.

Frederick V. Waugh, Assistant Deputy Director of the Office of Marketing Services of W.F.A., spent a month this spring at Iowa State College as visiting Research Professor in the Department of Economics and Sociology studying food marketing in the state.

Francis J. Weiss, formerly Technical Consultant with the National Planning Association, has been appointed Agricultural Economist with headquarters at Washington. Mr. Weiss was educated in Vienna, and received the degrees of Ph.D. and Sc.D. from the University of Vienna.

Edwin E. Wilson, Agricultural Economist, has been transferred from Berkeley to Washington, where he will assist in the assembly and analysis of changes in major land uses.

E. Peter Winter, who received his Master's degree in Agricultural Economics at Colorado State College, has joined the staff of the Division of Marketing and Transportation Research as Agricultural Economist.

E. J. Working has returned to the Department of Agricultural Economics, University of Illinois, after spending some months in research work for the Mutual Life Insurance Company of New York.

# JOURNAL OF FARM ECONOMICS

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## FARM TECHNOLOGICAL ADVANCE AND TOTAL POPULATION GROWTH

JOHN M. BREWSTER  
*Bureau of Agricultural Economics*

**D**URING the past quarter century the relationship of American agriculture to our total economy has been undergoing a revolutionary change, the full nature and implications of which are just beginning to be comprehended. The rate of gain of productivity of farm workers overtook the rate of population growth so that the age-old pressure of population upon the food supply changed skins and became the pressure of the food supply upon the population. Each year scientific agriculture increased a farm plant capacity already in excess of the Nation's food and fiber requirements, after allowing for substantial underconsumption resulting from lack of purchasing power on the part of low income groups. Farm employment reached its peak about 1910 and began a downward slide.

This does not mean that agriculture has become a contracting industry in terms of food and fiber output capacity. Quite the contrary. It means that a larger and larger production in line with society's food and fiber requirements provides effective employment for fewer and fewer farm workers. By 1944 farm production was the largest in our history but fewer people were engaged in farming than at any other time since about 1875. While the war has accelerated this increase in productive capacity on the one hand and occupational decline on the other, pressure for further change in this direction was already well on foot by the 20's and has been gathering head ever since with no prospect of abatement in the predictable future; war or peace, prosperity or depression notwithstanding.

## I

Food and fiber output capacity must expand with population growth but whether farm plant employment capacity expands or contracts depends primarily upon the comparative rates of increase of the domestic population and technological advance as reflected in farm labor productivity. This condition arises from the fact that within the foreseeable future neither foreign markets nor new uses of farm products nor increased per capita food consumption appear to offer outlets for such enlarged outputs of food and fiber as would require a greater number of farms and farm workers.

Except for the temporary influence of World Wars I and II, the export market for farm products has been declining since 1900; very rapidly in the 20's, and especially so in the 30's. For example, farm exports for 1925-29 required on the annual average approximately 50 million acres as compared with about 23 million for 1935-39, a decline of over 50 percent.<sup>1</sup> During the war, lend-lease and military requirements have absorbed about 20 percent of farm output, but this outlet will diminish as war-torn countries get on their feet. Maintenance of prewar levels of agricultural exports is about as much as can be expected when it is taken into account that science and technology are being increasingly applied to farming on a world-wide scale. As this is done other nations become less and less dependent upon American farms, even after due allowance is made for more favorable trade relations in terms of the principle of comparative advantage. In postwar years it is generally assumed that farm exports may be as much as one-seventh of the total farm production, provided we have full employment; otherwise the proportion is likely to be smaller owing to diminished foreign purchasing power arising from our contracting imports.

New outlets for farm products as industrial raw materials appear limited. Only a fraction of the total farm output is now used in this manner. The stomach is by all odds the primary consumer of farm products. Over 80 percent of the entire farm output is finally used as food, exclusive of tobacco products and beverages of all sorts. Another 5 percent goes into clothing. Probably less than 10 percent is used as industrial raw materials. Thus while the possibility of greatly expanded industrial uses of farm products must be kept in

<sup>1</sup> Estimated on the basis of average U. S. yields for each commodity in each period.

mind, the fact remains that there is "little sign that potential uses of this kind offer a field in which they can effectively compete with cheaper substances."<sup>2</sup>

Increased per capita food consumption offers little ground for such expanded production as to require more farm workers. While there is great variability in the amount of any particular food which a person may want, depending primarily upon its price and his income, the total amount of food which one can use soon reaches a saturation point; nor can consumption fall much below the maximum lest starvation set in. As a result, per capita consumption varies only slightly over long periods of time. For example, from 1909 to 1939 the average per capita daily food consumption was 4.96 pounds and in no year, depression or prosperity, did this average fall below 4.69 pounds or rise above 5.18 pounds.<sup>3</sup> The 1935-39 per capita average of food products was approximately 4.91 pounds—a depression period in which there was marked underconsumption on the part of low income groups.

The margin of underconsumption arising from limited purchasing power represents about the extent to which farm production may be expanded per capita. It has been estimated that during the depression years of 1935 to 1939 per capita food consumption was around 15 percent less than it would have been under full employment conditions.<sup>4</sup> Having once reached this maximum, then, except for imponderable changes in food habits, per capita consumption would offer no additional outlet for increased farm production.<sup>5</sup> At present, lend-lease and military requirements do not permit this high level of consumption but the farm plant is now producing about at this point. Obviously, lack of purchasing power should be removed as a barrier to adequate food consumption regardless of how successful we may be in maintaining full employment. But even if everyone had all the food he could use

<sup>2</sup> Barger and Landsberg: *American Agriculture, 1899-1939*, p. 309.

<sup>3</sup> *Ibid.*, Table 21, p. 151.

<sup>4</sup> Cavin, J. P.: "The General Food Situation," U. S. Department of Agriculture, Bureau of Agricultural Economics, Address at 22nd Annual Agricultural Outlook Conference, Washington, D. C., November 14, 1944.

<sup>5</sup> Changes in dietary habits under the influence of full employment and better knowledge of proper nutrition might increase farm employment opportunities without increasing the average number of pounds of food consumed per person. For example, a much greater proportion of fruits and vegetables might affect somewhat the total input of required farm labor even though the volume of agricultural production per capita as measured in pounds might not be altered. It is felt, however, that such eventualities would not materially disturb the present argument.



this increase in per capita consumption would not call for any new expansion in our farm plant.

It may be observed that expanding per capita consumption offers great possibilities for expanding total employment, but not farm employment. Any particular appetite or want has its satiation point, but the total number of wants is ever expanding; at least this is generally assumed to be the case. Farming primarily produces for a single appetite while non-farming industries as a whole provide for an ever expanding number of wants. Moreover, the food appetite is primary in that it must be fairly well satisfied at all times lest the individual perish, whereas many other wants may be virtually foregone without similar disaster.

Exports, industrial uses, and per capita food consumption are all likely to diminish in case of a depression. While they will expand under a full employment economy, it is unlikely that the most favorable conditions will require more farms and farm workers. Thus, population growth remains as the chief outlet for expanding farm production. More precisely, owing to the relatively constant per capita food and fiber requirement, the rate at which aggregate farm output capacity may expand stands in fairly direct proportion to the rate of population change (after allowing for exports and industrial uses). Therefore, so long as our population continues to increase the Nation will require a larger and larger farm output capacity but it does not follow that more farm workers will be required. It is quite possible that a growing society may require an expanding farm output capacity on the one hand and a diminishing number of farm families on the other hand. In great measure the nub of the matter turns on the question of whether the rate of technological advance as reflected in farm labor productivity is faster or slower than the rate of total population growth.

## II

The relatively constant per capita food and fiber requirement thus makes the comparative rates of technological advance in agriculture and total population growth of major importance to the occupational role of the farm plant in the total economy, even when industrial uses and exports of farm products are expanding and especially so when these outlets are fairly stable and limited. Over a long period of time a change in the relationship of these rates has unraveled three important occupational consequences, the

last of which is just now well upon us and has caught us ill prepared.

The proportion of persons engaged in non-farm occupations must necessarily increase. Roughly speaking, in countries unaffected by modern technology about 90 percent of the population is engaged in farming. In all countries where scientific farming has taken hold, the proportion has declined. In America from 1870 to 1940 farm workers as a proportion of all workers have declined from over 50 to less than 20 percent of the total population. During approximately the same period, there were similar declines in Sweden, Japan, and Germany.<sup>6</sup>

TABLE I. CHANGE IN FARM LABOR FORCE, AGRICULTURAL PRODUCTION, FARM WORKER PRODUCTIVITY, AND TOTAL POPULATION GROWTH, 1870-1940  
(1870=100 for all indexes)

Year	Farm labor force (Persons 10 yrs. old & over)			Agricultural production		Productivity per worker		Total population		
	Number <sup>1</sup>	Index	Percent change <sup>2</sup>	Index <sup>3</sup>	Percent change <sup>2</sup>	Index	Percent change <sup>2</sup>	Number <sup>4</sup>	Index	Percent change <sup>2</sup>
1870	6,849,772	100	—	100	—	100	—	38,558,371	100	—
1880	8,584,810	125	25	152	52	122	22	50,155,783	130	30
1890	9,938,373	145	16	190	25	131	7	62,947,714	163	26
1900	10,911,998	159	10	242	27	152	16	75,994,575	197	21
1910	11,591,767	169	6	276	15	163	7	91,972,226	239	21
1920	11,448,770	167	— 1	304	10	182	12	105,710,620	274	15
1930	10,471,998	153	— 9	338	11	221	21	122,775,046	318	16
1940	9,162,574	134	—13	378	12	282	28	131,669,275	341	7

<sup>1</sup> U. S. Bureau of the Census, *Population* (Sixteenth Census of the U. S.), Series P-9, No. 11, December 8, 1944.

<sup>2</sup> From preceding decade.

<sup>3</sup> For 1870, 3-yr. average centered on year indicated. For other years, 5-yr. averages similarly centered. Data since 1909 are derived from BAE index of volume of agricultural production for sale and for consumption in the farm home, *Agricultural Statistics 1943, U.S.D.A.* Data prior to 1909 derived from the Ideal Index computed by Frederick Strauss and Louis H. Bean, Technical Bulletin No. 703, December 1940, "Gross Farm Income and Indices of Farm Production and Prices in the United States, 1869-1937," Table 59, p. 125.

<sup>4</sup> U. S. Census, 1940, Series P-44, No. 21.

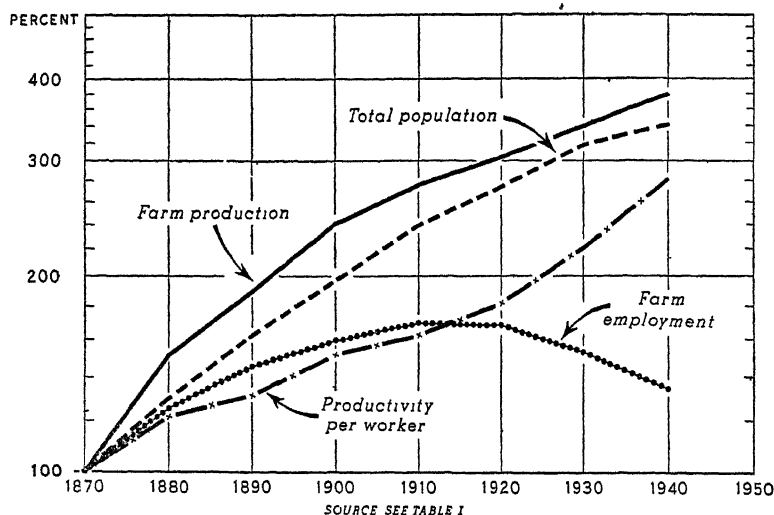
Yet while farm workers in America declined as a percentage of the total labor force, agriculture continued to be an occupationally expanding industry so long as the rate of population growth was faster than the rate of farm labor productivity. This was clearly the case in American agriculture until 35 years ago. From 1870 to 1910 there was a 139 percent gain in our total population as compared with only a 63 percent gain in farm worker productivity. Providing food and fiber for this larger population required more farms and farm workers, even though their labor was becoming

<sup>6</sup> "Memorandum on Opportunities for Occupational Adjustments in Agricultural Populations," Part II, E, p. 8, United Nations Conference on Food and Agriculture, Hot Springs, Va., May 18, 1943.

increasingly productive. While farm workers were a smaller proportion of all workers than ever before, there were 169 farm workers in 1910 for every 100 in 1870.

Under these conditions, families, once established in farming as a way of life and work, were not faced with the unheard of prospect of being heaved off the land by the effort of everyone to make two

FARM PRODUCTION, FARM EMPLOYMENT, FARM LABOR PRODUCTIVITY,  
AND TOTAL POPULATION, UNITED STATES, 1870-1940  
INDEX NUMBERS (1870=100)



U. S. DEPARTMENT OF AGRICULTURE

NEG 45182 BUREAU OF AGRICULTURAL ECONOMICS

FIG. 1.

blades of grass grow where only one had grown before. In that day the farm plant was indeed a place of spreading horizons for self-employed workmen and there were rhyme and reason in keeping a weather eye upon the Nation's soil as an ever growing bundle of opportunities for a larger number of willing hands.

But all this mode of thought and practice is now brought up short. For while our increasing population still requires an expanding food and fiber output capacity, the rate of technological advance as reflected in farm labor productivity has so stepped ahead of total population growth that the great weight of society is pressing for an occupationally contracting farm plant. Even

throughout the period of farm employment expansion, the handwriting was on the wall. For though population was increasing faster than the gain in farm labor productivity, the rate of population increase was slowing down while the rate of technological advance was speeding up.

For the first time in history, gain in labor productivity appreciably outraced the rate of population increase during the 20's and became four times faster during the 30's. For every 100 workers needed in agriculture in 1930, only 79 were needed in 1940. The pressure of population upon the food supply had done an about face.

This reversal of trends is no short term affair. While rates of farm technological change (as reflected in farm labor productivity) and total population growth may some day approach similar speeds, it is fairly certain that in the predictable future the disproportionate increase in farm technological change will continue; all the while requiring an increasing farm output capacity on the one hand and a declining farm employment capacity on the other hand. Total population is still growing but, except for a temporary spurt during the present war, the rate of growth is slowing down, so much so that an absolute decline is forecast within the next fifty years.<sup>7</sup> On the other hand, the gain in farm labor productivity is likely to keep on outracing population growth by quite a margin. For example, after making due allowance for exports and industrial uses likely to prevail under full employment conditions and assuming no increase in labor productivity, it has been estimated that the production of a high "prosperity diet" for a 1950 population of 144 million (4.4 percent more than in 1944) would require only 5 percent more labor in farming than was used in 1944.<sup>8</sup> Meanwhile, it is anticipated that farm labor productivity will increase from 22 to 26 percent as a result of wider use of fertilizer and lime, new crop varieties, more feed and better care of livestock, mechanization, and other improved practices, including conservation, crop rotation, pest control, etc.<sup>9</sup> Consequently, in light of this relatively faster rate of productivity increase over population

<sup>7</sup> Thompson, Warren S. and Whelpton, P. K.: "Estimates of Future Population of the U. S., 1940 to 2000," National Resources Planning Board, August, 1943.

<sup>8</sup> Johnson, Sherman E.: "Production Adjustments—1945 and Post-War," U. S. Department of Agriculture, Bureau of Agricultural Economics, Address at 22nd Annual Agricultural Outlook Conference, Washington, D. C., November 14, 1944, p. 10.

<sup>9</sup> *Ibid.*, p. 12.

growth, providing the larger total population of 1950 with ample food and fiber will actually require fewer farm workers than we had in 1944. While forecasts of farm labor productivity gains in subsequent periods have not been made, there is no reason to suppose that they will not continue, at least for several years, as rapidly as during the prewar years. Undoubtedly the rate would be even faster under full employment conditions.

So far the argument has assumed that exports, industrial uses, and per capita consumption of farm products will continue to be relatively stable and limited. It may be observed, however, that certain information indicates a smaller number of farms and farm workers would still be in order even if farm exports and new industrial uses of agricultural products should materialize far beyond present expectations. At least a substantial reduction in farms and farm workers would not interfere with such increased production and in fact might materially contribute to it. A chief reason for this is that a large proportion of the Nation's farms are so small in working resources as to be unable to utilize the more productive practice already established on more adequate units.

Some 1.2 million tracts enumerated as farms by the 1940 Census may be disregarded as a part of the productive agricultural plant because their resources and output were negligible. Of the remainder it has been estimated that there were some 91 thousand large-scale farms, 1,584 thousand farm units, with enough land, equipment, livestock, and other working capital to provide effective employment for operating families; and 3,182 thousand farms (52.2 percent of all units) on which resources appear so limited as to provide very ineffective employment opportunities.

In terms of value a man on the average adequate unit had three times as much land and buildings as the man on the average inadequate unit and, as measured by the total value of output, his work was 2.4 times as productive. He had 1.7 times as many total acres and 2.2 times as many crop acres. Apparently the quality of land was about the same in both cases because there was only a small difference in the total value of output per acre harvested, although poorer land on smaller farms may have been as productive because it was farmed more intensively.

Were the national farm plant organized so as to enable families on 3,182 thousand inadequate units to be as productive as those

on average adequate units, these smaller farms might be replaced by approximately 1 million units. Assuming that each unit represents 5 persons, this reorganization would call for approximately a

TABLE II. ESTIMATED LABOR SUPPLY, AMOUNT OF LAND AND VALUE OF PRODUCTS, BY GROUPS OF FARMS, 1940

Class of farms	Number of farms	Number of workers	Land in farms acres	Cropland harvested acres	Value land and buildings	Total value of products
	(000)	(000)	(000,000)	(000,000)	(000,000)	(000,000)
<b>A. Numbers and Values</b>						
U. S.	6,097	9,694	1,061	321	\$33,642	\$ 7,814
Large-scale <sup>1</sup>	91	550	260	26	5,096	1,501
Adequate <sup>2</sup>	1,584	3,300	400	175	17,863	3,835
Inadequate <sup>3</sup>	3,182	4,544	331	109	7,955	2,230
Nominal <sup>4</sup>	1,240	1,300	70	11	2,728	248
<b>B. Average Per Farm</b>						
U. S.	—	1.6	174	53	5,518	1,282
Large-scale	—	6.0	2,857	286	56,000	16,500
Adequate	—	2.2	253	110	11,277	2,421
Inadequate	—	1.4	104	34	2,500	700
Nominal	—	1.0	56	9	2,200	250
<b>C. Average Per Worker</b>						
U. S.	—	—	109	33	3,370	806
Large-scale	—	—	473	47	9,265	2,729
Adequate	—	—	121	53	5,413	1,162
Inadequate	—	—	73	24	1,751	491
Nominal	—	—	54	8	2,098	191
<b>D. Percent of Total</b>						
U. S.	100.0	100.0	100.0	100.0	100.0	100.0
Large-scale	1.5	5.7	24.5	8.1	15.1	19.2
Adequate	26.0	34.0	37.7	54.5	53.1	49.1
Inadequate	52.2	46.9	31.2	34.0	23.6	28.5
Nominal	20.3	13.4	6.6	3.4	8.1	3.2

Source: Based in part on U. S. Department of Commerce, Bureau of the Census, and the U. S. Department of Agriculture, Bureau of Agricultural Economics, a cooperative study, Technical Monograph, "Analysis of Specified Farm Characteristics for Farms Classified by Total Value of Products," Table 1, p. 30 and Table 1, p. 102. Cropland harvested and value of products are for 1939. Number of workers is for March 24-30, 1940.

<sup>1</sup> Farms with a total value of product of \$10,000 and over and other farms valued at \$40,000 if 2 or more horses and/or tractor was reported.

<sup>2</sup> Remaining farms with a value of product of \$1,500 or \$9,999 and also farms with a lower value of product if valued at \$800 to \$9,999 and if 2 or more horses and/or tractor was reported.

<sup>3</sup> All remaining farms, except for the last class, with a value of product of less than \$1,500.

<sup>4</sup> All farms with a value of product under \$750 and no horses, mules, or tractor reported.

35 percent decline in the 1940 farm population—well over twice the actual decline (15.7 percent).<sup>10,11</sup>

It thus appears that even much greater productive capacity is at least consistent with a considerably greater reduction in the number of farm workers and farms, and if the capacities of *men* as well as land, fertilizer, equipment, etc., are to be used effectively, then enhanced farm output capacity is dependent upon a much smaller farm working force than is now the case.

### III

As long as population growth was faster than technological change as reflected in farm labor productivity and as long as new land was easily available, total acreage in farms might increase faster than acreage per worker, thereby permitting an occupationally expanding agriculture. This condition prevailed until around 1910. For example, from 1880 to 1910 the acreage per worker increased 21 percent while total land increased 64 percent, thus permitting a 35 percent expansion of farm workers. But even though additional land were available, once farm worker productivity becomes appreciably faster than population increase, acreage per worker expands faster than total acreage, thereby mechanically squeezing an increasing number of farmers off the land.

The squeeze began operating slightly from 1910 to 1920, and has exerted increasing force ever since. During that decade, farm land per worker increased 10 percent while total acreage expanded only 8.7 percent, thus reflecting a 1.3 percent decline in the labor force. From 1920 to 1940, there was a 38 percent increase in acreage per worker but only an 11 percent acreage expansion in the national farm plant, thus reflecting a 20 percent decline of the Nation's labor force gainfully engaged in agriculture. The same principle applies to cropland.

While it may be true that only the less managerially competent get squeezed out, it should be observed that such competence has

<sup>10</sup> "Estimates of Farm Population and Farm Households: April, 1944, and April, 1940," Series Census-BAE, No. 1, January 14, 1945.

<sup>11</sup> While the present discussion is in terms of actual farms, it is recognized that nominal farms (or whatever else one may call them) are of great social importance and may become increasingly so because agriculture offers some opportunities for persons who on account of age, incapacities or handicaps of any kind, can contribute to their self-support. In like manner, part time units may become increasingly important. Information is not available, however, for a proper appraisal of such a role of land.

nothing to do with the fact of the squeeze taking place. The same thing would transpire even though all farmers were Newtons. Being equally competent would only mean that they would all bankrupt each other at about the same time.

An important reason for this more rapid increase of acreage per worker than total acreage lies in the fact that technological advance increases the land supply available for society's food and fiber requirement without adding to the total number of acres available to farmers.

TABLE III. NUMBER OF FARMS AND LAND IN FARMS, 1880-1940

Year	Number of farms	Land in farms			Cropland harvested		
		Total acres	Avg. per farm	Avg. per farm worker	Total acres	Avg. per farm	Avg. per farm worker
1880	4,008,907	536,081,835	133.7	62.4	166,186,584	41.4	19.4
1890	4,564,641	623,218,619	136.5	62.7	219,705,564	48.1	22.1
1900	5,737,372	838,591,774	146.2	76.8	282,218,280	49.2	26.0
1910	6,361,502	878,798,325	138.1	75.8	311,293,382	48.9	27.0
1920	6,448,343	955,883,715	148.2	83.4	348,548,549	54.0	30.4
1930	6,288,648	986,771,016	156.2	94.2	359,242,091	57.1	34.3
1940	6,096,799	1,060,852,374	174.0	115.0	321,242,430	52.6	35.1

Source: U. S. Department of Commerce, Bureau of the Census, 16th Census of the United States (1940), Agriculture, Vol. III, Chapter I, Table 4. Number of workers involved in columns 5 and 8 are from U. S. Census, *Population*, Series P-9, No. 11.

In the first place, by the substitution of mechanical for animal power, land (hitherto required for the workstock) is released as a human food and fiber resource. For example, from 1910 to 1940 the horse and mule population declined over 11 million on farms and some 3 million in the cities, thus releasing some 50 million acres as a human food and fiber resource.<sup>12</sup> In 1940 there still remained nearly 14.5 million horses and mules on farms, requiring over 50 million acres for their maintenance—enough land at prevailing yields to support nearly 23 million people. Total population is expected to reach its maximum of 167.7 million by 1980 (barring immigration and assuming medium fertility and mortality rates); an increase of some 36 million over 1940.<sup>13</sup> While it is unlikely that mechanization will displace all horses and mules, it may reasonably

<sup>12</sup> Brodell, A. P.: "Tractors Don't Eat Oats," *Land Policy Review*, August, 1941, Vol. IV, No. 8, pp. 25-28.

<sup>13</sup> Thompson and Whelpton, *ibid.*



be assumed that much of our population increase may be supported by land now supporting work animals.

Again, the development of higher producing plant varieties and better soil care makes a larger land supply available as a human food and fiber resource without increasing the number of acres available to farmers. This method of increasing the effective land supply has definitely come to the front only recently but will probably continue at an accelerated pace. Until the late 20's yields remained rather constant but have undergone a steady increase since then, especially from 1937 on. After allowing for weather, Shepherd has estimated that "crop yields have been increasing at the rate of nearly 1 percent a year for the past 20 years."<sup>14</sup> In other words, through improved soil care and higher producing varieties, the effective land supply is one-fifth larger now than in 1925. It has been estimated that "improved production practices now being followed and with average weather our crop yields are likely to average about 20 percent above the pre-drought years, 1923-32."<sup>15</sup> This is only a fair sample of what may be expected. Even by 1950, production may be further increased by 13 to 17 percent (over 1944) through the wider use of fertilizer and lime, new crop varieties, pest control, crop rotation and other conservation practices.<sup>16</sup> This, of course, is roughly equivalent to another 13 to 17 percent increase in the land supply during the next five years.

#### IV

As the rate of technological advance begins exceeding the growth of total population, all farmers become increasingly dependent upon a full employment economy as a means of providing largest possible markets for farm products on the one hand and sufficient alternative employment opportunities for an increasing number of excess workers on the other hand.<sup>17</sup> Again this reversal of the comparative rates of farm technological change and total population growth calls for a reappraisal of the tendency to bring new land

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<sup>14</sup> Shepherd, John B.: "Prospective Crop Yields in 1945," *The Agricultural Situation*, February, 1945, Vol. 29, No. 2, Washington, D. C., p. 17. Also see Taesch, Carl F.: "Are We Facing Seven Lean Years?" *The Scientific Monthly*, August, 1944, Vol. LIX, pp. 133-139; Barger and Landsberg: *ibid.*, pp. 278-286.

<sup>15</sup> Johnson, *ibid.*, p. 2.

<sup>16</sup> *Ibid.*, pp. 11-12.

<sup>17</sup> As used in this paper "full employment" denotes a total economy in which the number of acceptable jobs is at least equal to the number of persons seeking work.

into farms through public programs. For instance, should not programs to this end be coordinated with programs for retiring marginal lands, especially in areas of predominantly inadequate units? Also, should not effective actions be designed on the one hand to enable more families on inadequate units to shift into non-farm occupations and on the other hand to facilitate the reorganization of land in these units into more adequate farms or retiring such a part of it as is unfit for farming?

It is not, however, the present purpose to treat in detail these and many other implications of the reversal of these comparative rates but rather to focus attention upon the fact that a system of well-operated family farms is now more dependent than ever upon a full employment economy.

The principal reason for this lies in a chain of circumstances. Technological advance at a faster rate than total population growth requires an enlargement of land and working capital per man on the one hand and a declining number of farm workers on the other hand. In a partial employment economy it is more difficult for family farms to effect this population shrinkage than for large-scale farms because with family units the primary function of farming, in the final showdown, is not to provide customary returns to investment but to make a living for operating families. Accordingly, in facing the prospect of getting out of farming into something else the practical question a family farmer faces is not whether he is or is not making a profit on the value of his land and working capital but whether he can make a better living at something else. Therefore, unless a full employment economy provides other occupations in which he can make a better livelihood for himself and his family, it is only good sense to remain on his inadequate unit even if he does waste much of his energies through ineffective use. Half a job is better than none, especially if one is his own boss.

But under a system of large-scale farms the primary function of farming is not to make a living for the farm population but to provide the highest possible returns to the pecuniary values of land and working capital. Moreover, the tie of the working population to the farm plant is a tenuous wage or semi-wage relation. Thus, any reduction in the underlying population no longer rests with decisions of independent farm workers but with the judgment of a relatively few managers. Accordingly, it is a fairly simple matter

to increase acreage and capital per man in line with the requirements of technological advance by discharging any excess farm population and throwing its upkeep cost upon society at large. No corresponding method is available by which family operators can shift the maintenance cost of their idle or ineffectively used labor and management from their inadequate units to taxpayers at large.

So long as population increase was faster than gain in farm labor productivity, a partial employment economy did not put a system of family farms at such a disadvantage. Though periodic unemployment did reduce per capita food consumption somewhat and also tended to squeeze more people onto the land than were needed at the moment, the fact remained that the rapidly expanding population not only required more productive farmers but also a growing number of farmers. Land being easily available, it was not overly difficult for family farmers as a whole to keep in line with technological advance by expanding their units. Just this happened. While the average farm was 11 percent larger in 1920 than in 1880, there was a 61 percent expansion in the number of farms and a 78 percent increase in land brought into farms. Under these circumstances the ability to hire and fire at will a large portion of the labor force did not constitute such a competitive advantage to farm managers. The large-scale farmer, like the family farmer, might keep his labor and expand his acreage. All established farmers, large and small, might look to technology as a direct aid to each in his effort to become a bigger and better farmer since it was unnecessary for anyone to crowd his neighbor to the wall in order to keep in line with technological advance.

## V

Much of the so-called conflict between technological advance and family farms does not reside in the operating relation of a family to a well-operated farm. Instead, this conflict appears only in a partial employment economy and consists of a struggle between the farm and non-farm segments of that economy as to which shall maintain the farm families no longer needed in agriculture. From the farm segment springs a technological pressure for the reorganization of land into fewer and larger family units. From the non-farm segment springs a counter pressure to expand the number of units by squeezing more families onto the land.

Family farms are stunted by the cross fire. For wherever there is a clear separation of labor and management, whether in industry or large-scale farms, a restrictive economy reflects itself in an army of unemployed; but in family farming this unemployment takes the form of a growing number of inadequate units. In the one case unemployment is open and aboveboard, thus permitting easy detection, measurement, and remedial measures; while in the other case it masquerades under the guise of keeping "busy."

But as recent events bear out, a full employment economy relieves pressure for a larger number of farms and farmers and thereby makes possible greater resources for remaining family units. For example, there were 770,000 or 13.4 percent fewer households in April, 1944 containing a farm operator than in April, 1940.<sup>18</sup> Yet the farm plant turned out a 14 percent greater volume of food and fiber. Just how much shrinkage in the number of farms this occupational exodus represented will not be known until after the 1945 Census. Meanwhile, it is clear that this decline is not enough to enable the conversion of anywhere near all the 3.8 million inadequate units mentioned above into reasonably well-operated farms. Nevertheless, given a sustained full employment economy this adjustment has a fair chance of fully materializing. The full tendency of farm people to shift to non-farm pursuits is not reflected in the occupational shift of farm operators. In 1940 farm operators were 48 years old on the average. By that age one's habits are usually so stabilized and family responsibilities so great as to put the brakes on any ready impulse to shift into a new life work. This is not the case with younger age groups. Accordingly, while farm operator households declined only 13.4 percent from 1940 to 1944, there was a 30 percent decline in the number of young men from 14 to 19 years of age. While military call was in part the immediate reason for this decline of young men, a 22 percent decline of young women of this age group suggests that a sustained full employment economy would provide a system of family farms with a very favorable opportunity to adjust itself in line with technology already prevailing on approximately 1.5 million adequate family units. As previously stated, such a system of farms might consist of some 2.5 million units exclusive of some 80 thousand large-scale farms. Even this number, of course, would continue to decline until rates of technological advance, as reflected in

<sup>18</sup> Series Census-BAE, No. 1, *ibid.*

farm labor productivity and population increase, stabilize at similar speeds.

Though requiring more skilled operators and more land and capital, the fact remains that at least in mechanical terms, there is little evidence that technological advance places additional obstacles to a system of well-operated family farms. In the first place the steady tendency of mechanization has been in the direction of one and two man machines. For example, the old cradle and the modern combine require about the same labor force. Between the cradle and the combine was the old-fashioned header which required a crew of seven to ten men as well as the threshing machine which required a somewhat larger crew. Farm mechanization evens out labor peaks so that the same labor force is more able to do the work at any season. Labor peaks are primarily evidence of an incomplete mechanization of one or more operations involved in a given crop. The combine, for example, practically eliminated the extra labor required in the harvest and threshing season. The corn picker likewise eliminated the labor peak at husking time and the same principle applies to the pick-up baler.

Again, technological advance does not displace the family as the primary work unit by multiplying the number of different operations which must be carried out at the same time. Just the reverse is true. Farm processing industries have been transported from the farm to the factory, leaving on the farm primarily the growing operations. Growing things impose a temporal division of labor so that farm people shift from one operation to another as seasons change; whereas mechanization in basic non-farm industries leads to distributing the great multitude of operations involved in a finished product among many workmen and doing them simultaneously and continuously. Further, scientific farming does not, as a rule, increase the required labor force by multiplying the number of different crop and livestock enterprises which must be kept going at the same time. Instead, the tendency is to concentrate on a smaller number of supplementary enterprises which are most suitable to the soil, climate and other conditions of a given farming area.

In general, there is nothing technologically unique about a large-scale farm. Usually what one finds there are multiple units of family equipment and the same combination of enterprises that exist on well-operated family farms. The like cannot be said of modern

factory textile equipment, for example. Factory equipment cannot be broken down into household units.

A progressive farm technology as such provides a solid mechanical basis for a system of well-operated family farms. But as total population increase becomes slower than farm technological advance, the future of well-operated family units has come to rest increasingly upon a new social requirement—a full employment economy with alternative outlets for an occupationally declining agriculture. Falling short of this, family farms might survive but they would be caught between a farm technological pressure for a declining number of units, as a basis for more adequate farms, and the counter pressure of a partial employment economy for a larger number of less adequate units. Under these conditions the land would be compelled to play a larger relief role and less of its industrial role in providing men with effective employment opportunities commensurate with their abilities and the standard of living that goes with more productive effort.

## RESEARCH DETERMINATION OF ECONOMIES OF SCALE<sup>1</sup>

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PERHAPS as never before, the public imagination today is captured by the idea of planning—planning for postwar industrial developments, for the settlement of new lands, for the rehabilitation of devastated areas, for the rebuilding of cities and the clearing of slums, for public and private works of all types.

It seems appropriate to inject into this situation some discussion of that most useful planning tool—the concept of economies of scale. The concept itself is too familiar to require extensive presentation. Briefly, the economy of scale curve tells us the levels of costs that may be expected from the operations of plants of various sizes, *when operations are organized as efficiently as possible under the given conditions.*<sup>2</sup> More technically, the economy of scale curve represents the locus of the lowest average costs that may be achieved with variations in the scale of operation. As the scale is increased, economies will usually be present and will lead to reduced costs, but these will eventually be replaced by dis-economies and increasing unit costs.

The relationship between cost curves for individual plants and the curve representing economies of scale is shown in Figure 1.<sup>3</sup> Average short-run curves for several plants have been shown in the conventional form, first decreasing with the spreading of fixed or overhead costs but finally increasing as a result of diminishing returns as more of the variable factors are combined with the fixed factors. These may be thought of as the curves characteristic of the

<sup>1</sup> Based on Agricultural Economics Project No. 7, Storrs Agricultural Experiment Station.

<sup>2</sup> Several definitions are in order: "Plant" is used in a very general sense to describe a farm, industrial plant, school, market, or other productive unit; "scale" refers to the magnitude of the fixed plant and equipment; "capacity" represents the potential volume where a plant of a given scale operates most economically, i.e. where long and short run average cost curves are tangent; "volume" refers to the actual output achieved by a plant; "excess" or "unutilized" capacity is the amount by which volume fails to achieve capacity operation. It should be noted that the definition of capacity as the "most economical volume" will often preclude any objective measurement of capacity in advance. In spite of obvious disadvantages, this seems preferable to definitions in physical terms or, following Viner, in terms of "least cost," for these will usually depart from the most economical position. This will be clear in some of the examples given.

<sup>3</sup> For a more detailed theoretical discussion, see Viner, J., "Cost Curves and Supply Curves," *Zeitschrift für Nationalökonomie*, III (1931).

evolution of a plant as scale is increased over a period of time, or as the cost curves for a number of plants of different scales at any one time. If continuous variation in scale is possible, the economy curve will be tangent to these short-run curves and to many others that might have been added to the diagram.<sup>4</sup> If changes in scale are in fact discontinuous, then the economy curve will consist of segments,

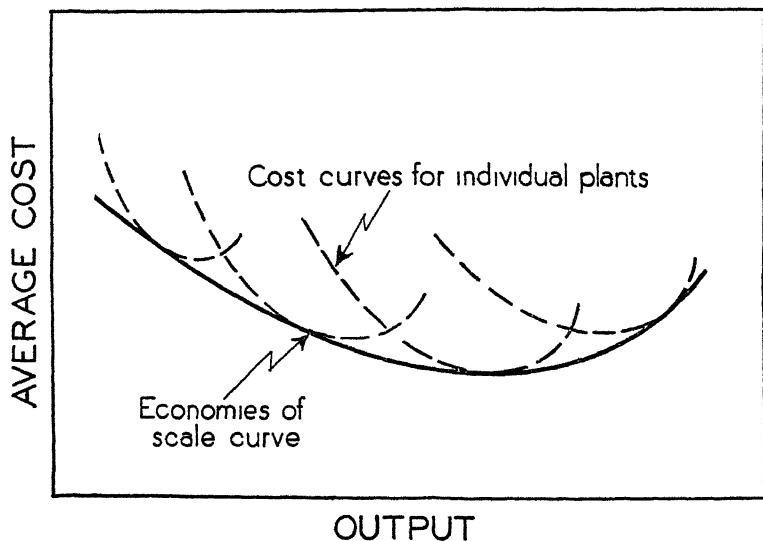


FIG. 1. RELATIONSHIP BETWEEN SHORT-RUN AVERAGE COST CURVES FOR INDIVIDUAL PLANTS OF DIFFERENT SCALES AND THE LONG-RUN AVERAGE COST CURVE FOR THE FIRM—THE ECONOMIES OF SCALE CURVE

of the several plant cost curves and will have a scalloped appearance. Assuming continuous variation, then capacity output as here defined is represented by these points of tangency. This illustrates the defect of a definition in terms of the least cost points for the short-run curves, for these points coincide with the most economical output only where the economy curve is perfectly horizontal.

This is the curve that is needed for intelligent planning, for it shows the cost advantages or disadvantages for prospective plants of various sizes. Several methods have been used by research workers in attempting to approximate such curves. Some of these

<sup>4</sup> There would be many poorly designed and organized plants, of course, whose short-run average cost curves would never drop as low as the economy curve.



are presented below, with some discussion of the validity of the results obtained.

### *Average Cost and Volume Data*

*Average regression lines.* One of the most common types of plant cost studies involves the determination of average costs and volumes for each of a group of sample plants. These cost-volume data are frequently presented as a scatter diagram, with an average

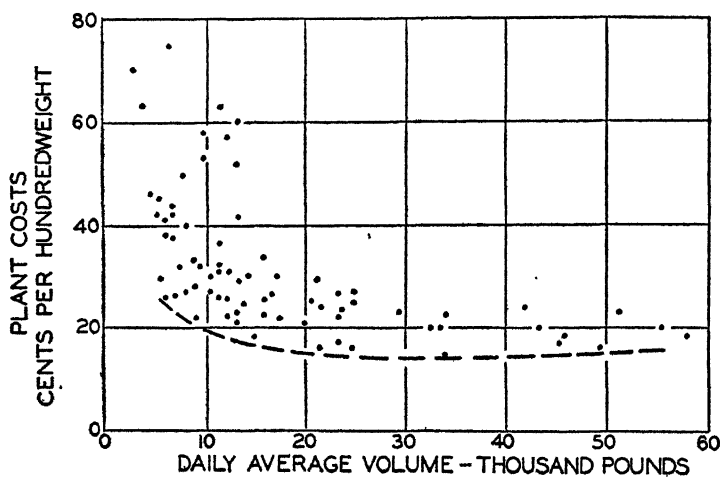


FIG. 2. AVERAGE VOLUMES AND COSTS FOR FLUID MILK PLANTS IN NEW YORK AND NEW ENGLAND, 1925

Each dot represents the cost and volume for an individual plant operating with more or less excess capacity. The envelope curve fitted to the bottom of the scatter is not the average regression, but an estimate of the economy curve.

regression line fitted to the scatter. This line or curve shows the average relationship between plant volume and costs. Unfortunately, it combines and confuses cost changes that result from the more complete utilization of a plant of a given scale with the cost changes that accompany changes in scale.<sup>5</sup> Each cost and volume point refers to a plant of some particular scale *and also* with some particular proportion of excess capacity. As a result, these points may scatter along the plant cost curves such as are shown in Figure

<sup>5</sup> Erdman, H. E., "Interpretation of Variations in Cost Data for a Group of Individual Firms," *THIS JOURNAL*, Vol. XXVI (May, 1944).

1 and only by chance will they approach the level of the economy of scale curve.

Such a scatter of cost and volume points is given in Figure 2. The data are from two studies of the costs of operating fluid milk shipping country plants in 1925.<sup>6</sup> It should be clear that any average regression fitted to these data will indicate costs above the minimum levels that define economies of scale. Moreover, the slope of the curve will tend to understate the savings available to individual plants as volume is expanded and capacity more fully utilized and to overstate the savings that will result from increases in scale when plants are operated to capacity.

*Locus of lowest cost points.* While the author is not familiar with any study where such an approach has been used, it would be possible to approximate the economy of scale curve from a scatter of cost and volume points by fitting an "envelope" curve to the bottom (rather than the average) of the scatter. Such a curve is included in Figure 2. In essence, it represents an attempt to define the locus of the lowest costs that were obtained at various volumes, and as such will approach the economy of scale curve insofar as the actual sample of plants included some which were efficiently organized and operated to capacity. The greatest danger in this approach appears to be that enough of such plants will not be included, especially in the high volume ranges where there are only a few observations. However, such a curve would be more defensible as an approach to economies of scale than the average regression, for at least it may approach the true curve while the average regression will only insofar as every plant in the sample is efficiently organized and operated at capacity.

A special method that would represent a combination of the above two would be to draw the curve as an average regression fitted to a sample selected to include only plants that are well designed, efficiently managed, and operated to capacity. The process of selection would eliminate excess capacity, and the resulting regression should be a close approximation to the desired curve. This direct and relatively simple approach, however, is not without practical difficulties. In the first place, it may be impossible to ob-

<sup>6</sup> Schoenfeld, W. A., Some Economic Aspects of the Marketing of Milk and Cream in New England, U. S. Department of Agriculture Circular No. 16 (1927). Tucker, C. K., The Cost of Handling Fluid Milk and Cream in Country Plants, Cornell University Agricultural Experiment Station Bulletin 473 (1929).

tain data from an adequate sample of plants with operations so perfectly adjusted. A survey of fluid milk plants in northern New England in 1939 indicated that only one in 17 was operating with peak seasonal volume in excess of 90 percent of capacity, while 12 of the 17 were operating at less than 70 percent of capacity.<sup>7</sup> On the average, these plants had capacity more than 50 percent in excess of peak season volumes.

In the second place, capacity may be hard to define. When plants are highly mechanized, and especially when automatic or semi-automatic machines are involved, the maximum output per unit of time is fairly well defined. In these cases, physical capacity will frequently equal or approximate the most economical output. If such a plant has been in operation for some time, however, the replacement of certain items of equipment may have destroyed the original integration of the plant. The capacities of many milk plants are limited by an out-moded can washer or an undersized refrigerating system. Where such bottlenecks determine capacity, it is plain that the higher capacity of the rest of the plant will be reflected in higher investments and average costs than would be found in a plant that was well designed throughout.

*Net regression lines.* Since average regression lines confuse the effects of excess capacity and of changes in scale, it appears only reasonable to use both of these as factors in a multiple regression analysis and so to determine the net effect of changes in scale. Strictly as a statistical problem, this approach involves several difficulties. The first of these is the definition of capacity and excess capacity. As mentioned above, the actual capacity of any existing plant may simply represent a bottleneck in some item of equipment rather than the real capacity of the rest of the plant. Even without this difficulty of definition, there is a joint relationship between costs and the two factors excess capacity and scale. In spite of these troubles, it probably would be possible to make an approximate solution that would approach the true economy of scale curve.

A similar attack would involve adjusting the average cost-volume points to represent full capacity utilization by some method other than multiple regression. If it is possible to define capacity and to divide average costs into fixed and variable portions, then

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<sup>7</sup> Bressler, R. G., Jr., *Economies of Scale in the Operation of Country Milk Plants*, New England Research Council in cooperation with the New England Agricultural Experiment Stations and the U. S. Department of Agriculture (1942).

it would be relatively simple to indicate the decreases in average fixed costs that would result from expanding volume up to capacity. If average variable costs are assumed to remain constant, then any set of average cost-volume data could be transformed into estimates of costs at capacity, as illustrated in Figure 3, and economies of scale based on the adjusted data.

The obvious objection to such an approach is that it violates the principle of increasing marginal costs. The only defense must be that this principle is not as important in the normal operating range

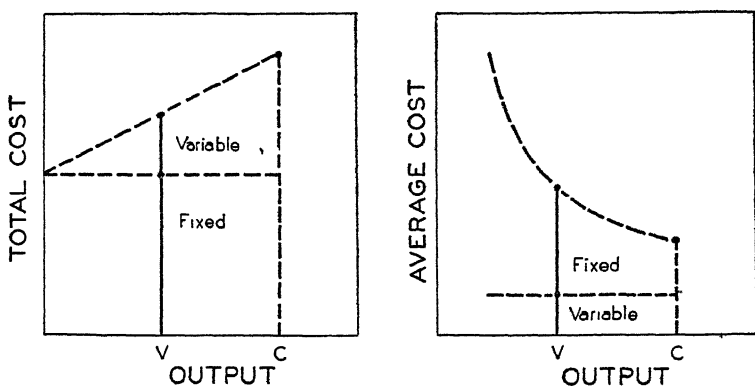


FIG. 3. PROJECTIONS OF A COST AND VOLUME SITUATION TO AN ESTIMATE OF COSTS AT FULL CAPACITY

In these diagrams,  $V$  represents the actual volume and  $C$  the plant capacity. It may be noted that the total cost projection is easier to make. Moreover, the use of total costs in this and other cases will avoid the danger of spurious correlation involved in the definition of average costs as total cost divided by volume.

as text-book illustrations might suggest, at least in some cases.<sup>8</sup> The previously mentioned study of country milk plants found little tendency for average variable costs to increase up to plant capacity, but very rapid increases beyond that point.<sup>9</sup> Paulson, studying cotton gins, concluded that total costs for any gin tended to increase with volume along a straight line.<sup>10</sup> This probably resulted from the fact that volume increases were made primarily by expanding the length of the ginning season. But in many cases where plants are

<sup>8</sup> It is significant in this connection to find that industrial engineers typically use linear total cost and total revenue curves to describe the effects of plant volume on costs and profits.

<sup>9</sup> Bressler, *op. cit.*

<sup>10</sup> Paulson, W. E., *Cost and Profit of Ginning Cotton in Texas*, Texas Agricultural Experiment Station Bulletin 606 (1942).

mechanized the problem of added volume becomes one of longer operation, and only minor variations in the output per unit of time are possible. While a can washer may be set at several speeds, once the top speed is achieved the addition of extra men will have little or no effect on output and will be so obviously uneconomical as to be outside of practical experience. Even in the response of milk production to feed inputs, most economists were prone to overestimate the curvilinearity of the relationship.<sup>11</sup> The assumption of linearity is admittedly dangerous, however, especially if unsupported by any evidence that marginal costs are in fact fairly uniform in the ranges under consideration. If marginal costs increase, then the projections made by this method will be low. In many cases, however, these errors would probably be small relative to the errors involved in using average cost-volume relationships.

#### *Detailed Cost Curves for Sample Plants*

Several of the above suggestions represent attempts to approximate segments of plant cost curves from a single cost-volume point and extensions based on multiple regression results or an (heroic) assumption as to the nature of variable costs. The methods described below are designed to derive plant cost curves directly and then to construct economy of scale curves from the plant curves. Three stages in this process are discussed, corresponding to an increasing dependence on synthesis.

*Effects of volume changes on average costs.* In most industries it will be possible to select a small sample of operating plants that represents a wide range in capacity or scale. In addition, it will usually be possible to select plants that have experienced large fluctuations in volume in some recent period. If input and output data for such plants can be obtained for a number of relatively short time intervals, it will be possible to construct cost curves for each plant covering the actual ranges in operations. Such a curve is illustrated in Figure 4, where monthly average cost and volume data are plotted to show the changes for a milk receiving station during a period of 20 months. Except for a tendency to decrease in the lowest volume ranges, average variable costs appear to be fairly uniform. The decline in average total costs thus reflects the spreading of

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<sup>11</sup> Jensen, Einer, "Some Results of the U. S. Department of Agriculture Experiments in Dairy Feeding," *Proceedings of the Annual Meeting of the New England Research Council* (1939).

fixed costs without offsetting increases in variable costs. The scatter of points around the total and variable cost curves is the result of two main factors: (1) the use of short time periods and the practice of reporting purchases rather than actual use of such items as fuel caused an apparent discreteness in the calculated costs that would have averaged out over longer periods; and (2) costs for such items as fuel and electric power were influenced by seasonal temperature changes as well as by volume changes, and so varied somewhat

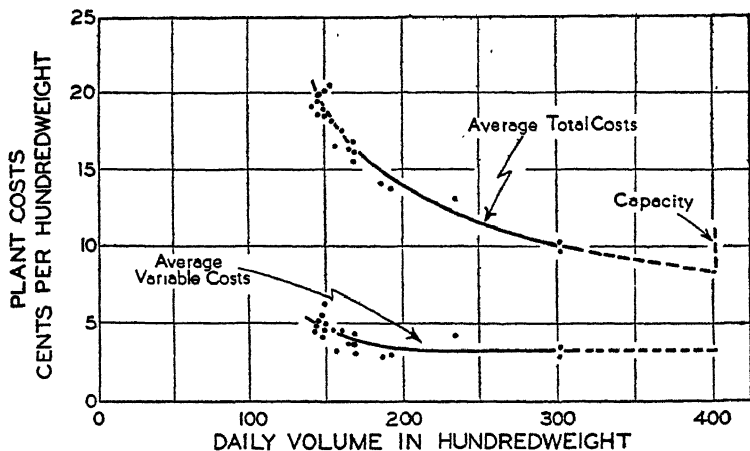


FIG. 4. AVERAGE TOTAL AND AVERAGE VARIABLE COSTS FOR A COUNTRY MILK PLANT, 1937-38

Dots represent average cost and volume data by months. The extensions of the curves to capacity volume have been based on detailed analyses of the several variable cost elements and the changes in these costs that accompanied volume changes. This diagram does not include butterfat losses as a cost, or the costs of general supervision and bookkeeping that were carried by an over-all organization for a number of plants.

from season to season even when volume remained constant. The curves have been drawn so as to smooth out these fluctuations. For reasons already noted, it is preferable to use total cost relationships, but the more familiar average cost curves have been presented in the diagram.

The broken extensions of the curves at the right of the diagram represent projections to the full capacity of the plant. While such extensions could be made directly from the average curves, a safer procedure is to analyze each of the principal categories of variable costs, and to examine them for increases in unit costs as volume in-

creases. In this example there appeared to be no significant departures from constant variable costs per unit except for the slight tendency to decrease in the lower volume ranges. Nor were increasing average variable costs found in analyses of the records of other plants. The cost curves were projected, therefore, with constant average variable costs and average total costs decreasing in line with the average reduction in overhead costs.

Even though these analyses failed to reveal increasing variable costs, there is no assurance that such increases would not occur in the range from the highest actual volume to the capacity volume. Volumes in several other plants approached capacity very closely, however, without noticeable increases in average variable costs. In any event, it will be desirable to select plants where actual volumes have approached capacity in the past. This will reduce the projections necessary to complete the cost curves and will thereby reduce the possibility of error in the projections. After a number of curves have been derived in this manner, it should be possible to draw an economy of scale curve similar to that illustrated in Figure 1.

*Partial budgeting.* The example of the above section was unusual in that it represented the operations of a fairly modern plant. As a result, there were no problems of mal-adjustments within the plant. All equipment was complete, in good condition, and so integrated that the whole plant had a fairly specific capacity, at least within the limits of normal operating hours. Investments in land, building, and equipment were easily obtainable and represented the actual purchase or construction costs. Fixed costs were as definite as the question of appropriate rates for such items as depreciation and interest ever permits.

In many plants, this would not be the case. Mention has already been made of the internal inefficiencies and bottlenecks that may develop in actual plants after some years of use. In addition, the problem of investments and fixed costs becomes complex. The actual depreciated values carried on the books of a company may be of little use to the economist. To the accountant, the main object of depreciation is to accumulate sufficient funds to replace the plant before it needs to be replaced. Under these conditions it is not uncommon to depreciate investments more rapidly than the probable useful life would justify, and then to carry the plant at zero or very low values after it has been completely depreciated. Moreover, it is good accounting (and economic) procedure to appreciate

or depreciate values in accordance with the profitability of the plant. If a plant has been operating at a profit, there will be a tendency for these profits to be capitalized into the "book values" of the plant, or into such intangibles as good will or the value of a "going" concern. If the past experience has been unprofitable, on the other hand, the "sunk" costs will be paid only what they can earn and will usually be deflated to appropriate levels. For all of these reasons, it may be difficult to arrive at investment and fixed costs appropriate for the plant.

One solution to this problem (or part of it) has been to substitute replacement costs for book values.<sup>12</sup> Even when this is done, there remains the problem of inefficiencies in the internal arrangement and integration of the plant. This may be solved by a hypothetical reorganization of the plant layout and equipment so that all items are in proper relation. By a budgetary approach, this new or re-designed plant can be coupled with the operating details of the old plant and a cost curve thereby synthesized. Finally, an economy of scale curve may be drawn in proper relation to a number of such plant curves.<sup>13</sup>

*Complete synthesis of plant cost curves.* In addition to the synthesis of fixed costs, it is possible to synthesize all costs involved in plant operation. As a matter of fact, this is the common planning procedure. Architects and engineers design a plant and estimate the costs of buildings and equipment. Job analyses indicate the number of men required in the various sections of the plant. Other variable costs are projected on the basis of known cost data and the principles of physics and engineering.

A brief example should illustrate the method for variable costs. Suppose the plant operations involve a refrigerating process. The total amount of heat to be extracted (BTU's) may be calculated from original and final temperatures, weight of the product, the specific heat of the product (BTU's per pound added or extracted to raise or lower temperature one degree Fahrenheit), the weight and specific heat of any containers, and heat losses in refrigerating rooms through insulation and openings. In fact, these computations will have been made in determining the type and size of refrigerating equipment to install. Studies of the performance of refrigerating compressors are available to indicate the general levels of efficiency



that may be expected from machines of various sizes and under various conditions. This information makes it possible to estimate the total load, the hours of operation, and the kilowatt-hours of electrical power. All that remains is to apply appropriate cost rates to the power inputs, and the result will be an estimate of the variable power costs. Other processes such as lighting and heating may be synthesized in a similar manner.

Two main problems in the synthesis of plant cost curves should be mentioned. First, increasing variable costs may be overlooked, although some of the engineering data will provide a clue in this matter. Second, it is frequently held that some costs are forgotten in this process and that the actual costs that will eventually characterize the plant when and if built will be higher than the estimates. While some of this criticism probably stems from the fact that volumes (rather than costs) have been forecast on optimistic grounds, there is the possibility that some costs will be overlooked or underestimated unless the work is carefully done and unless persons familiar with the operations are available to criticize the various aspects of the work.<sup>14</sup> Perhaps the best support for the method is that it has been used successfully for many years in such fields as construction. More recently, essentially the same approach has been used in agriculture, especially in planning the selection of enterprises and the adjustment of output on farms.

### *Seasonal Variation*

Seasonal variation in output is so common in agriculture and in the processing and marketing facilities serving agriculture that some special mention of its effects on the problem of determining economies of scale seems desirable. Where seasonal variation is a factor, it is obviously impossible for volume and capacity to be adjusted perfectly. If average cost curves are of the conventional shape, then the best adjustment to seasonal variation will involve producing beyond the most economical point during the flush season and below that point in the slack season. This will result in some increase in average costs, even though the average volume

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<sup>14</sup> It is the author's contention that men with technical training and practical experience can be of the greatest assistance in building up correct and complete sets of elements for the syntheses. On the other hand, their intimate knowledge (and often an undue emphasis on volume as a result of past experience with excess capacity) makes it difficult for them to give objective answers to the question of the most economical size of plant.

might correspond to the most economical volume. If the cost curve tends to decrease until a fairly specific capacity is reached, and then to increase very sharply (the case discussed in previous pages), capacity operation during the flush season will necessitate average costs higher and average volumes lower than the capacity levels. In either case, the cost curves may be reworked to show the season average costs that will result from any given seasonal pattern, and these revised curves may be used to determine economies of scale.

### *External Factors*

The foregoing discussion has been limited to the changes in plant costs that are associated with changes in the scale of operation—the “net internal economies of large-scale production.” In addition, there may be important economies or dis-economies associated with external factors. For the purposes of this discussion, it is helpful to distinguish three main types of external influences: (1) those resulting from the size and concentration of the industry rather than the scale of the particular plant; (2) those operations which may be handled by individual plants but which are advantageously carried on by centralized and specialized organizations; and (3) the inter-relationships between plant operations and transportation.

The first classification includes the conventional “external economies” resulting from increased output. As an industry grows and concentrates in particular localities, advantages may develop in the form of specialized labor and raw materials markets and in the growth of a group of secondary service industries. From the standpoint of the problem considered in this paper, these external economies are reflected in the existing prices of resources and services, and are independent of scale in that they are equally available to large and small plants.

The second type of external influences is an extension of the first in that it involves the advantages of specialization and centralization of certain functions. It differs primarily in that these functions are under the same or closely allied ownership rather than an independent industry. While many functions may fall in this category, the more common ones include bookkeeping, management, and buying and selling. If these operations are conducted by the individual plant, they must be considered with the internal factors and will result in technical or pecuniary economies. In many cases, however, the economical scale for these operations will differ from

that for the direct plant operations. Under such conditions, the optimum organization will involve the concentration of these functions for a number of plants in a single, specialized agency. Such developments are familiar in the centralized management and bookkeeping carried on by large firms for a number of subsidiary plants. In the individual plants these functions are reduced to a minimum of more or less routine work. In a similar way the advantages of large scale buying, selling, and advertising may be made available to plants regardless of their scale through associations and cooperatives. As in the first classification, external economies will be reflected to the individual plant in the form of prices or costs of materials and services. A complete analysis, however, would involve economy-of-scale studies for the specialized functions along lines similar to the studies of the subsidiary plants.

While transportation is clearly external to the operation of a particular plant, both plant operations and transportation are integral parts of the complete function. As the scale of plant operations increases, there will be accompanying changes in the nature and magnitude of the required transportation of raw materials and finished products. Larger operations will ordinarily make different forms of transport service available and economical. In its simplest form, this is illustrated by the difference between carlot and less-than-carlot freight rates. Moreover, whenever the operation involves the collection of raw materials or the distribution of products over a wide geographic area, increases in plant size will be associated with expanded supply or market areas and so with increased transport costs. Potential economies in plant operation are thus counter-balanced by dis-economies in transportation. The optimum organization of the complete function must be determined by balancing off these divergent tendencies so as to achieve the lowest cost for the combined operations.<sup>15</sup>

### *Conclusions*

Economy of scale or long-run average cost curves are important aids to intelligent planning, and the opportunities for their use will be magnified in the postwar period. The derivation of such relationships provides the research worker with a useful and interesting challenge. Perhaps the simplest and most direct approach to this

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<sup>15</sup> For a more detailed discussion, see: Bressler, R. G., Jr., "Transportation and Country Assembly of Milk," *THIS JOURNAL*, Vol. XXII, No. 1 (February, 1940).

problem involves the selection of a sample of plants that are well designed and efficiently operated without excess capacity (other than that made unavoidable by seasonal factors). Studies of average cost-volume relationships that combine and confuse economies of scale with internal inefficiencies such as excess capacity may be useful, but the results describe neither the short-run cost changes that an individual plant may achieve by expanding volume and "spreading overhead costs" nor the long-run cost changes that result from adjustments in the scale of operation.

If this simple approach cannot be used, the best alternative would appear to be the detailed analysis of cost-volume relationships for each of a small group of plants. If these plants are selected so as to be well organized and to represent a wide range in capacity, and if historical data are available over a period when output varied greatly, it will be possible to produce or at least approximate important portions of the cost curves. If necessary, these curves may be extended up to capacity volume through detailed analyses of the various items of cost and the effects of volume changes on these costs. Approximations to these same curves may be synthesized, partially or completely, by following methods essentially similar to those used by architects, contractors, and engineers in forecasting the costs of building, equipping, and operating plants.

One final word should be added. Even though technology may not change significantly for a period of years, economy curves may be limited in their application by historical and geographical differences in prices and cost rates. This limitation may be largely overcome by casting all relationships first in physical terms and then converting them to costs by the application of suitable cost rates. Rates may be varied according to the locality or the time, and the economy curves so adjusted to particular conditions. Such modifications are relatively simple to make and will greatly enhance the value of the research results. Of course, if the relative prices of factors have changed materially or if there have been important technological developments, then the optimum combination of the factors will be different and the basic physical relationships will have to be revised.

## COSTS OF FEDERAL AGRICULTURAL ACTIVITIES: THEIR MEANING AND CLASSIFICATION FOR PURPOSES OF ECONOMIC ANALYSIS\*

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**D**URING the period of underemployment of the 1930's there was a tendency to judge the various types of governmental activities almost entirely in terms of direct benefits to the particular individuals or economic groups immediately concerned and to exclude such standards as the cost of governmental activities and their general benefits relative to those of other governmental services. In recent years, however, as a consequence of all-out war, there has been greater pressure to utilize more efficiently resources of both men and materials, and attention has again centered on some of the basic economic relationships which are fundamental to the adequate operation of the economy. In the sphere of governmental activity one form that this emphasis has taken has been the demand to reduce so-called nonessential activities of the Federal Government.

In some respects it is unfortunate that the emphasis on economy and efficiency should be so pronounced in times of war, for judgment as to what is most important is highly colored by the immediate needs of the moment. As a result it is difficult to give proper weight to some of the longer run considerations such as adequate peacetime employment and a desirable functional division between government and private services. On the other hand, the vast physical and financial expenditures in this war, the size of the public debt, the unavoidable reconstruction and rehabilitation expenditures, and the outlook for a high level of defense expenditures in the postwar period, all highlight the need for careful consideration of the kinds of governmental services to be undertaken and the formulation of concepts useful in making such judgments. It is to be hoped that attention to the problem of economic efficiency can be sustained even after we are "out of the woods," and that in the postwar period ideas of economic efficiency can be broadened until

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\* The ideas presented here have served as a framework of reference for a fiscal study of Federal activities related to agriculture on which the author is engaged in the Bureau of Agricultural Economics. Appreciation is due Dr. Donald C. Horton, Bureau of Agricultural Economics, for the stimulation and interchange of ideas he has provided in connection with this project.

they reflect an adequate comprehension of all of the closely related economic problems which constitute efficient over-all operation of the economy.

This paper seeks to explore only certain aspects of these problems; namely, the meaning and significance of "costs" of governmental activities with particular reference to agricultural activities of the Federal Government, the problems involved in the technical measurement of these costs, and the classification of Federal activities related to agriculture into appropriate functional categories useful for economic analysis.

### *Meaning and Significance of Costs*

Costs of Federal activities related to agriculture have the same basic significance as have those in other fields of governmental action. As the term is used here, cost means the financial burden borne directly or indirectly by general taxpayers as a result of the various services and programs of the Federal Government. Implicit in this definition is much the same idea that is present in the accounting term of costs or expenses for a business firm, except that the entity bearing the burden of governmental costs consists of general taxpayers as a group whereas business costs are an operating condition for the business firm. Despite the general similarity of meaning, there is an important distinction between the concept of governmental costs and the business concept of costs. As ordinarily used, business costs mean the total outlay by a business firm for materials, labor, and other resources used in the process of providing goods and services. Governmental activities also involve outlays for materials, labor, etc., and these outlays are much like business expenses; but such expenses are not necessarily costs to general taxpayers as the term is used here. To the extent that governmental enterprises charge a price to consumers as a group to cover the expenses of quasi-business services, these expenses do not involve costs to taxpayers. The concept of general taxpayers as an entity thus lies back of the concept of cost of government.

Governmental costs also are conduct conditioning in a somewhat different way than are business costs. Whenever a decision is made to extend governmental activities, to discontinue others, or to adopt new programs, there is consciously or unconsciously a weighing of the benefits and other effects of such programs against their costs to taxpayers. These judgments are made primarily by legislative

bodies and in the light of a wide variety of considerations. In sharp contrast to the legislative process of determining governmental activities, decisions to use resources in the private economy to produce food, clothing, housing, and personal services are made on the basis of the ability and willingness of consumers to pay a price sufficient to cover the costs of making specific goods available. Presumably the free play of market forces and the resulting price structure serve both as a guide to the proper allocation of labor, capital, and other factors in the production process and as a sufficient check upon the amount of scarce resources so employed. Those services of government which are more in the nature of business services, and for which a price is charged, are assumed to operate under conditions similar to the private economy. The payment of a price by recipients of the service is assumed to serve as a sufficient check upon the use of resources for such purposes. Consequently, in the consideration of governmental services, whenever a question arises as to the amount of benefit derived relative to the volume of costs, it generally refers to those services of government which are made freely available to citizens, the cost of which is borne by general taxpayers. Needless to say, many services of government are a mixture of business and free services, and in these cases a combination of public decisions and market-price decisions control the use of resources.

*Governmental Costs as Competitive With Private Economy.* The most general interpretation of costs of government is to regard them as being competitive with the costs of conducting private economic activity. This idea stems from the fact that economic resources are scarce relative to human wants and the performance of governmental services requires the utilization of scarce resources in the same sense that private economic activity utilizes scarce resources. In the private economy the costs of materials, labor, and other resources, in conjunction with consumers' demand, determine the market price of the product—a price which indicates the economic significance of the commodity and serves to control its allocation among various possible uses. Similarly, because government hires the services of individuals and wealth by bidding in the market in competition with the demand of private business for these same services, it is assumed that the dollar cost of the resources used by government measures their economic importance. Accordingly, costs of government in relation to total national income are fre-

quently regarded as measuring the share of productive resources devoted to governmental services.

*Limitations on Concept of Competitive Costs.* While the concept which regards costs of government as competitive with the cost of private economic activity is applicable to many activities of the Federal Government, there are certain limitations on its too rigorous use. As has been indicated above, most governmental services are not sold on the market as private services are sold, but are made freely available to those who qualify and who wish to make use of them. The extent and kind of services provided and the levying of taxes to meet their cost are determined through legislative processes rather than market forces. There is, of course, in an over-all sense a balancing of the value of governmental services against their costs, but the main considerations are frequently social rather than individual. At times the welfare of some individuals may be slighted in the interest of greater benefits for the majority of individuals or for the public as a whole. We rely upon the democratic process to secure an equitable adjustment between the individual and the public interest involved. Consequently, in the field of governmental action there can never be a precise balance between worth of particular services and their costs, and it is inevitable that these matters be left to legislative judgment.

A second limitation lies in the fact that the private economy does not always operate at as high a level of economic activity as the available resources would reasonably permit. Under these circumstances costs of government do not compete so sharply with the private use of resources as in times of full employment. For example, in the 1930's, the fact that many millions of persons were unable to find employment acted as a strong inducement for government to undertake work projects in place of direct relief grants. Such projects not only provided income for the unemployed but also enabled society to make some use of economic resources whose inactivity represented a permanent loss to the economy. Granted that government work projects in times of unemployment utilize some resources which compete with private industry, still the use of idle resources does not involve as great an economic cost as does the use of those same resources in times of full employment.

Still a third limitation is due to the nature of certain governmental activities such as relief grants and benefit payments, which are intended primarily as a means of transferring purchasing



power. These activities occasion money costs to general taxpayers, but others are the recipients of the funds. A competitive use of "real" physical resources is not involved except in the costs of administration. What is perhaps of more importance than the limited governmental use of resources in administration is the indirect effect on private consumer and investment expenditures induced by the redistribution of income which occurs through government payments to individuals. Even though little use of physical economic resources may be involved, costs of government should include all outlays which directly or indirectly place a charge on general taxpayers.

*Costs Not a Measure of Aids to Agriculture.* Frequently, an attempt is made to use data on Federal agricultural expenditures as reported by the Treasury or data on costs of Federal agricultural programs as a measure of so-called aids to agriculture. Obviously, neither expenditures nor costs to general taxpayers afford a precise measure of the aid which the Federal Government renders to the agricultural industry. Without attempting to define the term "aid," it should be clear that other considerations besides cost are important in determining the amount of governmental assistance which agriculture receives. For example, the nature of the governmental service—which establishes the particular kind of framework in terms of which government attempts to benefit the agricultural economy—is important in determining the amount of aid received by agriculture and by other groups. Furthermore, there are numerous economic and social factors which also affect the distribution and ultimate benefit from governmental aids. Costs of government are one important element in judging the desirability of governmental activities, but they do not measure "aids" except in a very crude sense as applied to broad aggregates of governmental functions.

#### *Problems of Measuring the Cost of Federal Agricultural Activities*

Measuring the costs of long-standing agricultural research and educational activities creates no difficult technical problems, for the expenses of these services are adequately recorded and clearly recognized as costs to the Treasury. Either Budget data or Treasury disbursement figures are a reasonably good measure of the costs of these activities. Similarly, the volume of cash payments to

individual farmers in connection with production-control programs can immediately be interpreted as costs to the Treasury and to general taxpayers. What cannot readily be determined are the costs involved in various Federal loan, investment, and other "enterprise" activities related to agriculture.

Treasury figures on cash expenditures, which are the basic source of financial data on governmental activities, are actually figures on disbursements from the Treasury, and, accordingly, they include various investment expenditures such as direct loans, subscriptions to capital stock of governmental corporations, and capital outlays, as well as actual expenses of carrying on governmental services. Cost is a narrower concept than disbursement and should be a measure of the financial obligation of taxpayers as a group arising out of the performance of governmental activities. Therefore, costs should include: (1) The cost of routine governmental services such as research, education, regulatory activities, and general administration; (2) losses incident to governmental loan operations; (3) losses incident to other governmental enterprises such as reclamation projects and crop insurance; (4) interest on government-provided capital for governmental enterprises; (5) direct grants to individuals; and (6) grants-in-aid to State and local units of government. Certain aspects of the problem of measuring these costs are discussed in the following sections.

*Current Costs and Capital Outlays.* In arriving at data on the cost of governmental activities in any field, four principal types of disbursements must be distinguished; namely, current costs, capital outlays, loans, and trust fund operations. Current costs consist of the expenses incurred for services of government for which no specific price is charged. In connection with some of the services rendered through the Department of Agriculture, there are collections of fees, licenses, and other reimbursements. While not always precisely in accord with the cost of these services, it seems preferable to regard these collections as charges for the services rendered unless there is an indication that the fee charged is out of all proportion to the service rendered, as is true, for example, in the case of liquor licenses of the State governments when the license charge is really a revenue device.

Logically capital outlays should be distinguished from current costs; however, this is difficult to accomplish in government expenditure data because of (1) the inadequacy of governmental

accounting in distinguishing capital outlays from other expenditures, and (2) the variety of types of capital assets acquired by the Federal Government and the difficulty of determining suitable depreciation rates. As a result, most ordinary expenditures for capital assets, whether land, buildings, machinery, or other equipment, may be included as current costs in the years in which the assets are acquired. This involves no very great inaccuracy for an organization as large as the Federal Government if the capital assets acquired represent a relatively small proportion of total costs and are incidental to regular governmental services. Treating capital outlays as current costs, however, would be inaccurate when a program is primarily the acquisition of capital assets and repayments are expected to return the monetary investment made. Outlays for reclamation projects are an example. An inaccuracy also results in the case of land purchases when the asset may not depreciate or wear out in ensuing years and the land may subsequently be sold thus recovering the funds invested.

Loans should also be distinguished from current costs because loans by their very nature are expected to be recovered in principal repayments. Trust fund operations involve no cost to government inasmuch as these items are in reality bookkeeping transfers of one kind or another.

*Governmental Enterprise Services.* In addition to ordinary governmental services, there is a substantial volume of governmental enterprise activity similar to the postal system. These enterprise services are expected to be paid for by the prices charged in a manner similar to private economic activity. And in still other instances such as the rural rehabilitation program of the Farm Security Administration, by shouldering a part of the cost, the Federal Government utilizes enterprise relationships as a medium for furnishing governmental services or for providing special benefits to particular groups.

Ideally the method of determining the cost to the Federal Government of such enterprise activities is to compare the receipts or gross income with the full costs of operation including costs of administration, interest on capital supplied, and any other pertinent costs in an economic sense. The extent to which receipts do not cover the full costs would be a measure of the annual cost to the Federal Government. This method would apply to governmental enterprise activity the same considerations which would be

applied to the private economy. The fact remains, however, that it is difficult to determine the full costs of governmental enterprise activity.

*The Cost of Uncertainty Bearing.* The cost to taxpayers arising out of performance of the uncertainty-bearing function is virtually impossible to estimate. By entering into enterprise activity through agencies of government, collective judgment as to the economic worth of an enterprise is substituted for the judgment of the private entrepreneur. Although collective judgment may be more nearly in accord with social interests than the judgment of the private individual from his self-interest point of view, it is also necessary to recognize that the cost of the uncertainty-bearing function performed by the private entrepreneur is now shifted to the group as a whole acting through its responsible agents in government. This is particularly true of the economic cost associated with the undertaking of financial responsibility in the case of such agencies as the Federal Farm Mortgage Corporation, the Federal land banks, and the production credit corporations, and also where the Government guarantees the obligations of a Federal agency. In the private economy the responsibility for making entrepreneurial decisions rests in private hands, and the losses of the enterprise are sustained by those who take the financial responsibility; any profits are viewed as a payment for this uncertainty-bearing function. In governmental enterprise the financial responsibility is borne by society as a whole, and in most Federal enterprises the rates set or charges made are not intended to produce any profits, but the benefits from increased enterprise efficiency are intended to be felt elsewhere. In fact, these charges may not be expected to cover even the minimum interest on the capital supplied. Under such circumstances the cost of entrepreneurial services performed by government can hardly be measured. There is no objective standard with which to compare these costs, particularly when there is no very closely competitive private enterprise of a similar nature.

*Annual Losses From Enterprise Activities.* Administrative expenses and other operating costs of governmental enterprises can usually be determined fairly readily on an annual basis from data contained in the *Budget of the United States* or from reports of the corporations or agencies concerned. What cannot readily be determined is the annual volume of losses from these enterprise activi-

ties. In the case of going corporations, such as the Commodity Credit Corporation, there is no way of knowing what these losses actually will be until the affairs of the particular corporation are finally wound up and the assets liquidated. An indication can be given of what accrued losses have been up to a certain date, but it must be remembered that so long as the corporation is a going concern those losses may be offset, at least in part, from profits on future operations. Annual accounting for governmental costs is simply not applicable to an enterprise activity which necessarily relates to a longer period of time.

Notwithstanding the accounting difficulties involved, cost data should include an estimate of the loss which the Federal Government is likely to suffer as a result of the programs undertaken, and this loss should be imputed to the years in which the activity is carried on rather than the years in which the loss is legally recognized or actually written off. Unless appropriate losses are imputed to the years in which the services are performed, there can be no proper basis for comparing the financial burden involved with the benefits or social gain from governmental activity. The fact that it is necessary to estimate such losses and that estimates may have to be revised from time to time is no greater handicap than that faced by the private businessman whenever he estimates the probable profits or losses from expanded production or the purchase of new capital goods.

In the case of loan activity carried on by governmental agencies rather than by corporations, the record of losses incurred in the past from similar types of loans affords the only objective basis for estimating losses on current loans. This method of estimating losses could be applied in connection with the loan activity of the Farm Security Administration and the emergency crop and feed loans made through the Farm Credit Administration.

#### *Classification of Activities Related to Agriculture*

For the purposes of this discussion it has been assumed that there is a fairly well defined group of activities of the Federal Government which might be regarded as "agricultural" activities. Such an assumption is not entirely justified. The determination of total costs of government in connection with agricultural services is as much a problem of defining and classifying "agricultural" services as it is a problem of obtaining representative data with which to

measure the costs involved. An appraisal of governmental activities must rest on a sound basis of classification, otherwise there can be no effective way of comparing benefits and other effects of diverse governmental programs. It is not intended here to make an exhaustive classification of all Federal activities related to agriculture, but the outline and basis for such a classification can be indicated.

It has long been customary in treatises on public finance to regard governmental activities as falling into certain functional categories such as national defense, protection of persons and property, education, highways, etc. Accordingly it would seem logical, in analyzing activities of the Federal Government, to designate one category as "agricultural activities." The basis for this category lies in the fact that for many years public policy has consistently sought to give special aid to the agricultural industry or to agricultural interests. The agricultural industry and rural people have been accorded "special treatment" by means of special research and educational services, federally sponsored agricultural credit institutions, and, particularly since 1929, both special programs designed to influence farm prices and grants to individuals as a means of raising farm income directly. In most governmental programs affecting agriculture there has been a measure of general social interest, and no analysis would be complete without considering the degree of general social interest involved. But in an over-all classification of Federal activities, the category of "agriculture" would necessarily be distinguished from other functions of government according to whether such services were intended primarily to benefit a special group or were impartially for the benefit of society as a whole.

Within the "agriculture" category, doubtless many classifications are possible, but the classification finally selected must harmonize a number of competing considerations. It must be useful for economic analysis; at the same time it must recognize the institutional setting into which the activities are fitted and the limitations in obtaining financial data regarding such activities. The purpose of any classification is to bring order into that which is unwieldy without classification. Therefore, each subgroup of activities should be sufficiently homogeneous so that a generalized judgment can be made with regard to all the activities of that group.

The most workable classification of Federal activities related to agriculture seems to be one based on the economic nature of the program carried on. That is to say, all governmental services involve certain fundamental relationships between government and the private economy, and the classification would depend on the aspect of the agricultural economy or the kind of governmental relationship concerned. Such a classification is neutral in the sense that it avoids any preconceptions as to the specific purposes for which a program is undertaken or the specific benefits from such a program; and it permits an unbiased analysis of the actual effects of the Federal programs included. On the other hand, it provides a basis for a meaningful comparison between groups of agricultural activities according to their costs to the Treasury and indirectly to general taxpayers. A tentative list of these relationships between the Federal Government and the agricultural economy follows:

1. Activities related to the development and dissemination of knowledge regarding agricultural production and marketing processes.
2. Activities related to the development and conservation of land resources.
3. Activities related to the financing of farm ownership and farm operation.
4. Activities related to the bearing of agricultural production risks.
5. Activities designed to affect agricultural prices by operating through market processes.
6. Activities designed to affect agricultural production decisions and to supplement farm incomes.
7. Activities relating to special wartime food-management programs.
8. Activities in the nature of direct grants and services to relieve distress and to rehabilitate farm families.

It should be noted that agricultural programs of the Federal Government, as legally defined, do not readily fall into these categories. Programs such as those of the Farm Security Administration, the Agricultural Adjustment Agency, and certain agencies of the War Food Administration are a mixture of two or more of the kinds of activities listed. In these cases it is necessary to make a subdivision of the costs of a particular governmental

program. For example, the costs of AAA are in part the cost of developing and conserving land resources and in part the cost of activities designed to control agricultural production and to supplement farmers' incomes directly. Moreover, in the 1930's, the AAA administered export-subsidy and surplus-removal programs which affected agricultural prices by operating through market processes. In the case of surplus-removal programs and subsidized food-consumption programs, the presence of general welfare benefits as well as special aids for the farm group further complicates the problem of classifying governmental services. In such cases it is necessary to classify the program according to the manner in which it affects the agricultural economy even though general welfare purposes are also important.

Throughout this type of classification the degree and kind of governmental influence on the agricultural economy are the bases for classifying a particular program. Those research and educational services of the Federal Government which operate by increasing the general knowledge of the farmer regarding agricultural production processes and marketing conditions differ in their effects from programs which directly influence the market demand or supply of farm products. Similarly, governmentally sponsored farm credit agencies making primarily business-credit loans differ in their relationship to the agricultural economy from the loan activities of the Commodity Credit Corporation in which price-support programs are a counterpart of the Corporation's loan activities.

Any classification of Federal agricultural activities is less suitable as the period over which it is applied is extended. During the war period, all activities of the Federal Government have been related in some degree to the functioning of the war economy. Likewise during the depression years of the 1930's, most Federal programs were related to the problem of promoting a recovery of the private economy as a whole. It is impossible, therefore, to suggest a final and unchanging classification. However, a classification and analysis of the costs of Federal activities related to agriculture in terms of the major items listed above would provide a better framework than now exists for comparing and evaluating the overall significance of governmental services.

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This paper has attempted to state what the author believes is a desirable point of view with regard to costs of government and the



applicability of that point of view to agricultural activities of the Federal Government and their appropriate classification. Functions of government should be selected with a view to the manner in which they mesh with economic activities of the private economy. This does not mean that the economic effect of governmental services and other activities should be the sole guide to their selection, but it does mean that their economic effect—in the broadest terms possible—should be given major consideration in determining governmental policy. Economic effects have at least three aspects: (1) The incidence of the direct benefits which flow from public expenditures to carry on governmental activity, (2) the effect of the institutional set-up and the administrative mechanism through which government influences the private economy, and (3) the cost to the Treasury and indirectly to general taxpayers as a result of governmental services. This third aspect encompasses the effects of various alternative methods of obtaining tax revenues. For the purposes of this paper it has been assumed that in a progressive, democratic society costs of government will be distributed in an equitable manner, with due regard to the effect of taxes on business efficiency and individual economic well-being.

Benefits from governmental activities should be compared with their costs and with the alternative use of such funds within the private economy. This means, of course, that determining the absolute dollar costs of governmental services is only the first step toward determination of governmental policy. Some judgments must also be reached on over-all benefits and alternative private and public use of such funds. The normal peacetime economy would involve very different judgments from a wartime economy, and periods of depression would involve still other judgment standards.

## WAR-TIME PRICE CONTROL OF FRESH CITRUS FRUITS

J. WAYNE REITZ\*

PRICE CONTROL of fresh citrus fruits has been in operation in some form for the past three seasons. Citrus fruits were the first of fresh fruit and vegetable perishables to be brought under the emergency price control act. Officials of the Office of Price Administration have frequently pointed with pride to the smoothness with which price regulations have operated on citrus in comparison with other commodities. In view of its "long" history and the judgment rendered by price officials, it may be an opportune time to describe and examine the record of price control on this important segment of the fresh fruit and vegetable industry. Furthermore, a preliminary type of analysis can best be made while the events are still in sharp focus.

If certain mechanisms of price control and their implications are to be properly judged, it can best be done by concentrating on one product. Application may then be made to problems of commodities with similar production and marketing characteristics. It is the author's view that the problems of price control for citrus fruits are at a minimum as compared with those of fresh vegetables and most of the other fresh fruits. Thus, at the outset, it will be recognized that weaknesses in the citrus price control program are generally magnified for most other fruit and vegetable perishables.

### *History of Citrus Price Regulation*

The first attempt to control citrus prices was under Temporary MPR 22. It applied only at the retail level and the maximum price was limited to the highest price charged by the seller during the period September 28, 1942, to October 2, 1942. This regulation became effective on October 5, 1942, and continued in effect until December 3, 1942. On January 11, 1943, MPR 292, applicable only to fresh citrus fruits, became effective. Under this regulation, the first level of control was set at the shipping point with percentage mark-ups for the various distribution services. There were as many delivered price ceilings as there were freight differentials

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\* Economic Counsel, United Growers & Shippers Association, Orlando, Florida. While alone responsible for the views expressed, the writer wishes to acknowledge the suggestions and criticisms given by Drs. C. V. Noble and H. G. Hamilton of the University of Florida and Dr. K. H. Parsons of the University of Wisconsin.

among points of origin to destination. While not intended, non-shippers and non-packers circumvented country shippers, in periods of short supply, by buying fruit direct from the grower and selling it at whatever price they wished in wholesale or retail outlets, provided retail ceilings were not exceeded. This was possible because of the favorable wholesale and retail mark-ups which permitted handlers easily to absorb fruit costs above the f.o.b. level. This regulation, with numerous amendments, was in effect until February 23, 1944 when Amendment 19 creating Appendix I was added to MPR 426, the general regulation for fresh fruits and vegetables. Appendix I pertained exclusively to fresh citrus and contained important modifications of regulation 292. The new regulation established basing point pricing, thereby making it possible to obtain uniform delivered ceiling prices irrespective of point of origin within an area of production. It also forbade non-shippers and non-packers from paying more than the reflected on-tree price when buying direct from grower. A third change was the establishment of fixed dollar and cent mark-ups for the various jobbing interests instead of the percentage mark-ups under MPR 292.

Thus, with a short period of control at the retail level only, a full year under MPR 292 and over a year with MPR 426, it now becomes possible to evaluate the effectiveness and the implications of controlling citrus prices.

### *Method of Computing Ceiling Prices*

Basic to a study of price control on any commodity is an understanding of the methods of computing ceiling prices at the various levels of control. Under Section 3 of the Stabilization Act of October 2, 1942, maximum prices on farm products may not be fixed at a level which will reflect to producers a price lower than the highest of: (1) Parity prices or comparable prices when comparable prices have been substituted for parity prices, as a result of production and consumption of a commodity having so changed as to result in a price out of line with parity prices of the basic commodities as provided for by the Act; (2) The highest price between January 1 and September 15, 1942, when adjusted for seasonal variation; or (3) A price sufficient to cover the increases in labor and other cash costs and depreciation since January 1, 1941.

In the case of oranges, a comparable price, with a 1933-40 base, was selected in conformity with the provisions of the Act. For grapefruit, the highest price between January 1 and September 15, 1942, was found to be mandatory. To these prices appropriate adjustments were made for changes and anticipated changes in the index of prices paid by farmers, plus an allowance of 50 cents per box for grade and size.<sup>1</sup> On oranges the U. S. base on-tree price thus arrived at was \$2.67 and for grapefruit \$1.70. These prices were then adjusted for area differentials on the basis of past price relationships. In the case of oranges, Florida and Texas prices were reduced from the U. S. base by 26 cents and California and Arizona received an increase of 18 cents. The area differential for grapefruit was a minus 6 cents for Florida and Texas and a plus 25 cents for California and Arizona. With the area adjustments, the base Florida price for Interior<sup>2</sup> oranges is \$2.41 and for white grapefruit \$1.64.

Using Interior Florida base prices as a starting point,<sup>3</sup> the method of arriving at the grower on-tree reflected price and in turn the f.o.b., delivered wholesale, and retail price is shown in Table 1. The varietal differentials cover the normal discount on oranges as compared with tangerines, Temple oranges and like varieties; whereas on grapefruit, white is discounted in comparison with pink. Since the differentials are made on a weighted basis the premium for tangerines and the like is a plus 35 cents over the Florida base, and for pink grapefruit a plus 33 cents. Seasonal differentials are self-explanatory. The area differentials are to reflect historical price relationships between the Interior and Indian River sections. Here again, because of the element of weighting, Indian River receives an average of 34 cents above the Florida base for oranges and 45 cents for white grapefruit.

Up to this point all that has been obtained is an on-tree price which will reflect to the grower a price to conform with the provisions of the Stabilization Act. This price covers two different

<sup>1</sup> The Stabilization Act requires that prices be fixed by grade and size or a reasonable allowance be added to the legal minimum to permit the better grades and sizes to sell at their normal relationships.

<sup>2</sup> Two major areas of production, the Interior and Indian River areas, are recognized in Florida. Historically Indian River fruit produced along the middle and lower east coast has commanded a higher price than Interior grown fruit.

<sup>3</sup> For purposes of simplicity, most of the illustrations will apply to Interior Florida fruit. Since Texas oranges and white grapefruit have the same f.o.b. prices and basing point as Florida Interior, the applications thus apply to areas of production in two states.

seasons for oranges and white grapefruit. Ceilings on tangerines and pink grapefruit are without seasonal differentials. To this on-tree price is added \$1.20 for picking, hauling and packing in the case of oranges and \$1.05 for grapefruit.

TABLE 1. METHOD OF COMPUTING PRICE CEILINGS ON FLORIDA INTERIOR AND TEXAS ORANGES AND WHITE GRAPEFRUIT FROM BASE PRICE TO CONSUMER IN NEW YORK CITY.\* (1½ bushel box)

Item	Oranges		White Grapefruit	
	Sept. 1 Feb. 28	Mar. 1 Aug. 31	Sept. 1 Feb. 28	Mar. 1 Aug. 31
Base price <sup>a</sup>	\$2.41	\$2.41	\$1.64	\$1.64
Variety differential	-.03	-.03	-.02	-.02
Variety base price	2.38	2.38	1.62	1.62
Seasonal differential	-.11	+.19	-.11	+.15
Seasonal adjusted price	2.27	2.57	1.51	1.77
Area differential	-.02	-.02	-.05	-.05
On-tree reflected price	2.25	2.55	1.46	1.72
Allowance for pick, haul and pack	1.20	1.20	1.05	1.05
F.O.B. ceiling	3.45	3.75	2.51	2.77
Freight and protective service	.90	.90	.90	.90
Delivered price	4.35	4.65	3.41	3.67
Maximum jobbing mark-up	.75	.75	.65	.65
Maximum price to retailer	5.10	5.40	4.06	4.32
Retail mark-up (39%)	1.99	2.11	1.58	1.68
Price to consumer:				
Per box	7.09	7.51	5.64	6.00
Per pound <sup>b</sup>	.084	.089	.077	.082

\* Also applies to Philadelphia, Baltimore and Newark, and is approximate for points along the Ohio River.

<sup>a</sup> Prices do not show adjustments for damage suffered in the October 19, 1944 hurricane which were handled by temporary amendments to MPR 426 during the 1944-45 season. There were no adjustments on oranges after March 1, 1945.

<sup>b</sup> In computing the price per pound, the following net weights were used: Oranges, 84 pounds; grapefruit, 73 pounds.

The first effective point of price control is at the f.o.b. level. While no shipper or packer of citrus fruit may sell above the announced f.o.b. price, he need not observe the on-tree reflected price if his costs and operating conditions will permit him to pay more. However, a non-shipper or a non-packer who buys fruit direct from the grower cannot exceed the on-tree reflected price.

To arrive at delivered ceiling prices, the freight rate from Homestead, Florida, plus a 10 cent protective service allowance,<sup>4</sup> is added to the f.o.b. ceiling. Using the same basing point of Homestead for both Florida and Texas presents an interesting aspect of price con-

<sup>4</sup> A 3 percent Federal Tax is also added to the freight and protective service allowance.

trol. It, no doubt, was done in the interest of simplicity. However, in practice it definitely tends to alter the market territories for each of the areas. Especially is this so in the case of Texas. The system has greatly reduced the shipment of Texas citrus to the eastern markets, because actual freight and refrigeration is greater than the allowance.<sup>5</sup> To the extent that Florida shipments fill the eastern market gap, movements from Florida to the Middle West are thereby reduced.

With a Florida basing point, Texas has a distinct advantage in selling as much fruit as possible near home. For example, shipments of white grapefruit from points in Texas to Kansas City enjoy a freight and protective service mark-up of \$1.06, based on Homestead. The actual freight and refrigeration is approximately 63 cents and when ventilated cars are used the charge is considerably lower. Thus if fruit is selling at ceiling at all destination points, Texas shippers can garner another 43 cents or more above the f.o.b. ceiling for shipments to Kansas City. The same situation, to a much lesser degree, applies on Florida shipments since Homestead is in the southernmost part of the state. In general, when citrus is selling at ceiling, shippers can net back from 10 to 25 cents above the f.o.b. price by selling on a delivered basis. The amount varies with the distance the shippers are from Homestead and whether or not refrigeration is used.

For deliveries within Florida, a total of 25 cents is allowed for transportation and protective service charges. Since the actual costs of delivery so nearly approach or exceed this figure in many parts of the state, shippers find it more profitable, when prices are at ceiling, to ship citrus to more distant out-of-state points using the Homestead basing point. As a consequence, in May of 1945 housewives in Florida are finding it difficult to buy fruit produced in this state. It seems a bit of irony that Floridians may have to eat California oranges when Florida oranges are still moving to more distant markets!

Having arrived at a delivered price, the jobbing interests operating within a free delivery zone may add a maximum of 75 cents per box for Florida and Texas oranges and 65 cents for white grapefruit from each of the states. The jobbing mark-up is classified into

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<sup>5</sup> Under Amendment 100 to MPR 426, effective May 5 to July 31, 1945, OPA changed the basing point for Texas white grapefruit from Homestead, Florida, to Weslaco, Texas, to encourage shipment of Texas grapefruit to eastern markets.

several categories to the extent that only the full 75 cents can be added in those cases where delivery is made in small lots to retail stores, institutions and the like. For example, if a primary wholesaler sells ex-car or ex-warehouse in less than carload lots he may add only 45 cents per box, leaving the remainder of 30 cents for the secondary jobber. To the maximum wholesaler's price independent retailers may add a 39 percent mark-up and chain stores a 36 percent mark-up in arriving at the retail price.<sup>6</sup> In those cases of large chain systems with direct or subsidiary commission companies only 1½ percent may be added to the delivered price in lieu of the jobbing mark-up plus the 36 percent for the chain retailer.

When one has followed the maze of computations involved in the determination of ceilings at all levels of control, one wonders if the good reception of the regulation as reported by officials of the OPA cannot be attributed to lack of interest in delving into its intricacies? Less facetiously, it appears to the writer that the chief reason the regulation has worked fairly well, judged by OPA standards, is the abundance of citrus fruits which has been on the market throughout most of the period of control.

### *Excessive Margins for Distribution*

One of the most hotly discussed aspects of price ceilings on fresh Florida citrus fruits is that of margins allowed the distributive interests. In the case of allowances for shippers it is well known that industry cost figures were used, based on the bulk line principle. However, in the case of wholesale jobbing and retail interests, adequate data on margins were apparently lacking in the judgment of OPA. The general condition as applied to most commodities is acknowledged by officials who said, "Data on wholesale and retail prices and margins were practically non-existent and limited resources made their collection and tabulation a slow process."<sup>7</sup> With this situation prevailing, the OPA properly conferred with industry representatives of the wholesale and retail trade. Under such circumstances and with the limited data available, the natural process was to establish good, safe margins.

<sup>6</sup> As here used, independent retailers are those with an annual gross sales volume under \$250,000 for a single store, or with three or less stores having combined annual gross sales under \$500,000. Chain stores are individual stores with annual gross sales of \$250,000 and over, or four or more stores with combined annual gross sales of \$500,000 and over.

<sup>7</sup> Segal, S. A. and Hoffman, A. C. Food Price Control—Policy and Mechanics. *THIS JOURNAL*, February 1943, p. 26.

Evidence of the windfall which has accrued to jobbing and retail interests on fresh citrus under price control is indicated in Figure 1. For the period 1932-42 there is a close relationship, as would be expected, between the retail price per dozen of oranges and the percent of the consumer's dollar returned to the grower. But something drastically happened in 1943 and 1944, the two full years when f.o.b. ceilings with legal mark-ups for jobbers and retailers were in effect. While ceilings were in effect for two months in 1942, they were at the retail level only and it is apparent that jobbers and retailers maintained their normal margins.

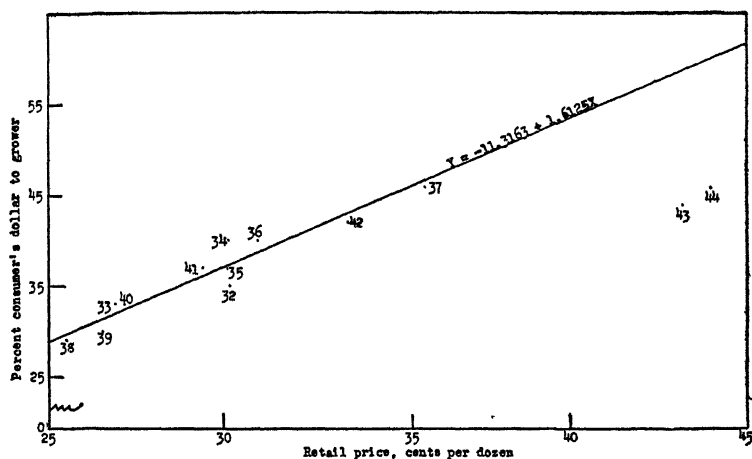


FIG. 1.—RELATION OF CONSUMER'S DOLLAR RETURNED TO GROWERS TO RETAIL PRICE PER DOZEN ORANGES, 1932-44

Source: Bureau of Agricultural Economics. United States Department of Agriculture. Unpublished data.

Only the data for the years 1932 through 1942, during which period there was no price control or at the retail level only, were used in fitting the regression line. The price per dozen is based on .0613 box of oranges.

It is recognized that the line of relationship in Figure 1 could not move upward indefinitely. At consumer prices which prevailed in 1943 and 1944 there is evidence to indicate that the line of relationship would have tended to level off. However, it would have been at a point more nearly at 55 to 56 percent of the consumer's dollar returned to the grower than the 44 and 46 percent which was returned. Of the data which were available to OPA at the time of establishing mark-ups for the distributive interests, none with which the writer is familiar would warrant the margins permitted.



Referring to Table 1, it will be observed that the mark-up allowed retailers of Florida oranges in New York City and similar points is approximately \$2.00 per box. In November, 1939, the average mark-up was 92 cents and in March, 1940, \$1.01 according to a study made by the Farm Credit Administration.<sup>8</sup> In the case of Southeastern markets, Hamilton reports that for the 1938-39 season retail mark-ups of oranges of independent stores were approximately 84 cents per box for independent merchants and 60 cents for chain stores. The comparable figures for grapefruit are 65 and 60 cents.<sup>9</sup>

Granting that retailers are entitled to higher absolute mark-ups than in the pre-war years, it is evident that the margins permitted are in excess of what conditions warrant. It is also apparent that the mark-ups used are more exorbitant for Florida fruit than for California, yet the same margin applies to fruit from each area. In a study of margins made by Kuznets<sup>10</sup> the average retail mark-up in New York City for California oranges was \$1.68 per box for the four-year period ending with 1942. Yet the average mark-up for California oranges permissible under price ceilings is \$2.43 per box. For 29 United States cities<sup>11</sup> the average retail mark-up for the four-year period ending in 1942 was \$1.28 per box, with the average annual margin fluctuating between \$1.21 and \$1.34.<sup>12</sup> The average maximum permitted by OPA for these 29 cities for California oranges is \$2.33.

Equally interesting comparisons can be made between customary mark-ups and the permitted maximum margins of 75 cents on oranges and 65 cents per box on grapefruit for the wholesale and jobbing interests.

For those faced with the problem of price control, it is readily understandable that they would seek measures which would make it possible for operators with customary high margins to continue

<sup>8</sup> See Rasmussen, M. P., et al. Retail Outlets of Fruit in New York City. Farm Credit Administration. Bul. 52, June 1941. Per pound margins obtained by retailers as shown on page 32 were multiplied by 84 pounds to obtain the margin per box.

<sup>9</sup> Hamilton, H. G. Unpublished data. Department of Agricultural Economics, University of Florida.

<sup>10</sup> Kuznets, G. M. Statistics Relating to Marketing Margins in Oranges and Lemons. Unpublished. Gianinni Foundation, University of California.

<sup>11</sup> Albany, Atlanta, Buffalo, Columbus, Dallas, Denver, Des Moines, El Paso, Grand Rapids, Hartford, Houston, Indianapolis, Kansas City, Memphis, Minneapolis, Oklahoma City, Omaha, Portland (Me.), Portland, (Ore.), Providence, Richmond, Salt Lake City, San Antonio, Scranton, Seattle, Spokane, Tulsa, Wichita, and Syracuse.

<sup>12</sup> Kuznets, G. M. *Ibid.*

operation as in the past. Yet that very principle works to the disadvantage of producers and consumers in both the period of price control and in the period when controls are eliminated. It simply means that lower cost handlers of citrus, when supplies are short and demand great, will, and do find ways of realizing the full mark-up, even though under normal competitive conditions they operate on a much lower margin. Thus the consumer, as has been so commonly observed, pays the full ceiling price without the grower benefiting from what could have been lower handling charges under some degree of competition. Furthermore, when f.o.b. prices are below ceiling levels, the maximum retail ceilings continue to be observed in a vast majority of instances. Thus the wholesale and retail interests are not only guaranteed a high margin when fruit is at ceiling at all levels, but a vast majority enjoys a still greater windfall when prices weaken at the f.o.b. level. This latter situation is more responsible than anything else for the relatively low percent of the consumer's dollar returned to the grower during the past two years. (See Figure 1.)

Equally disadvantageous to producers and consumers when price control is abolished will be the tendency for handlers to resist reductions in margins to which they have become accustomed under the OPA. This is particularly so in certain regions where handling charges were customarily very low. For example, in the Southeastern markets the evidence shows that from 60 cents to 90 cents per box has been the customary margin taken by retailers for oranges in recent years. Yet consumer ceilings in this region have been established on a basis of a retail margin varying from \$1.75 to \$2.00 per box. Because of wartime demand conditions, merchants have in the main, taken this legal margin. One certainly cannot blame the merchants, but the mechanism which permits the situation to exist can be blamed.

When demand slackens in the postwar period, will not these artificially high margins, to which the trade has become accustomed, cause a far greater decrease in the grower price than has been noted in previous price declines? Some will argue that margins will be reduced on the assumption that retailers take a uniform percentage mark-up, which certainly is implicit under the OPA 39 percent margin for independent retailers. While the mark-ups may average out to a certain percentage over a period of a year, evidence indicates that in practice retailers and some

jobbers at the moment think in terms of absolute mark-ups. Also retailers in high income areas add greater mark-ups than in low income areas. One of the most comprehensive studies made on retailing of fruit sheds this light on uniform mark-ups by retailers:

"The matter of percentage gross margins is probably also greatly over-emphasized insofar as the retailer is concerned. The retailer cannot pay his bills with percentages. His major personal problem is to spend his time on those products which will yield him the largest weekly total gross margin in dollars and cents. . . . It should be borne in mind that in describing what has happened, retailers commonly report results of operations in terms of percentage of gross sales. In calculating possibilities of gross profits on a given fruit, however, it is more likely that an estimate of the probable gross margin in dollars and cents per wholesale package is the factor which guides a retailer in determining whether or how much of a commodity he will stock."<sup>13</sup>

### *Inconsistencies in Community Ceiling Prices*

In establishing ceilings on fresh fruits and vegetables, growers have been chiefly concerned with f.o.b. prices. However, there has been increasing interest in the manner in which these ceilings are finally reflected in the price to the consumer. The mechanics of this aspect of price control can best be judged by a study of community ceiling price announcements as issued by the various offices of the OPA. As of December 7, 1944, the author collected such announcements for fresh fruits and vegetables for all regions in the United States. For Florida oranges and white grapefruit these are summarized in Tables 2 and 3 for those states in which these fruits were priced.

In issuing community ceiling prices two types of announcements are made. One is known as "urban," which is issued weekly and in which an attempt is made to reflect the wholesale price then in effect. Another is known as "rural," which is issued monthly and reflects ceiling prices on the assumption that at all times and levels fruit will be selling at ceiling.<sup>14</sup> In practice there is little variation between the two except an attempt to reflect differences in additional charges for transporting outside of free delivery zones by jobbers, which is the usual case in "rural" announcements.

One of the chief functions of community ceilings is to provide appropriate differentials in retail prices to reflect differences in transportation costs from areas of production to destination. If

<sup>13</sup> Rasmussen, et al. *Op. cit.*, pp. 33-35.

<sup>14</sup> Large chains or stores doing an annual volume of business in excess of \$250,000 are required to compute their ceilings by adding 36 percent to the cost of their largest purchase of the previous week.

TABLE 2. SUMMARY OF 163 OPA COMMUNITY CEILING ANNOUNCEMENTS ON FLORIDA ORANGES FOR WEEK BEGINNING DECEMBER 7, 1944<sup>a</sup>

State <sup>b</sup>	How priced (Number of announcements)			Minimum weight per dozen size 200 <sup>c</sup>		Maximum price per dozen size 200 <sup>c</sup>		Maximum price per pound	
	Pound only	Dozen only	Pound and dozen	Range	Aver- age	Range	Aver- age	Range	Aver- age
				lb.-oz.	lb.-oz.	(cents)	(cents)	(cents)	(cents)
Massachusetts		1		—	—	0	51	—	—
Connecticut		1		0-0	4-6	0	50	—	—
Maine		2		—	—	13	53	—	—
Vermont		1		—	—	0	56	—	—
New Hampshire		2		—	—	5	54	—	—
New York	5	8		1-2	4-10	7	49	0	10
Delaware		1		—	—	0	50	—	—
D. of C.	1			—	—	—	—	0	9
New Jersey	5	1		0-0	4-6	0	49	1	9½
Pennsylvania	6	4		1-7	5-0	5	49	1	10
Ohio	1		5	0-0	5-0	4	51	1	9½
Kentucky	1		5	0-0	5-0	5	45	1	8½
Michigan	4		5	0-0	5-0	3	47	1	9
West Virginia		8		0-0	5-0	4	48	—	—
Georgia			7	1-7	4-11	9	42	2	8½
Alabama			7	0-0	5-0	9	39	3	8½
Florida	2			—	—	—	—	0	8
Mississippi			2	0-0	5-2	7	44	0	8
N. Carolina			3	0-4	4-13	2	39	1	7½
S. Carolina			2	0-0	5-0	5	43	1	8½
Tennessee	4			—	—	—	—	1	9½
Virginia			4	0-6	5-0	2	45	0	9½
Kansas	4			—	—	—	—	2	11
Louisiana	3			—	—	—	—	2	9
Missouri	1			—	—	—	—	0	9
Oklahoma	4			—	—	—	—	0	10
Illinois	9			—	—	—	—	3	10½
Iowa	5			—	—	—	—	1	10½
Nebraska	6			—	—	—	—	2	10½
Minnesota	6	1		—	—	0	49	1	11
S. Dakota	2			—	—	—	—	1	11½
Wisconsin	7	1		—	—	0	52	1	9½
Idaho	2			—	—	—	—	0	10
Washington	14			—	—	—	—	0	10

— Information not given or not applicable as the case may be.

<sup>a</sup> Some of the announcements are "rural" ceilings and apply for the whole month of December. Such is the case, for example, with most of those for the New England states, in which one ceiling may apply to the entire state.

<sup>b</sup> Only those states are listed in which Florida oranges were priced. States are arranged by OPA regions.

<sup>c</sup> The size refers to the number of oranges in a 1½ bushel box.

TABLE 3. SUMMARY OF 110 OPA COMMUNITY CEILING ANNOUNCEMENTS ON  
INTERIOR FLORIDA WHITE GRAPEFRUIT FOR WEEK BEGINNING  
DECEMBER 7, 1944<sup>a</sup>

State <sup>b</sup>	How priced (Number of announcements)			Minimum weight per piece size 54 <sup>c</sup>		Maximum price per piece size 54 <sup>c</sup>		Maximum price per pound	
	Pound only	Piece only	Pound and piece	Range (oz.)	Aver- age (oz.)	Range (cents)	Aver- age (cents)	Range (cents)	Aver- age (cents)
Massachusetts		1		—	—	0	13	—	—
Connecticut		1		0	24	0	14	—	—
Maine		2		—	—	4	14	—	—
Vermont		1		—	—	0	15	—	—
New Hampshire		2		—	—	1	14.5	—	—
New York	5	8		5	19	1	13.5	1	10
Delaware		1		—	—	0	14	—	—
New Jersey	5	1		—	18	0	13	1	10
Pennsylvania	6	3		0	21	1	13.5	1	10
Ohio	1		5	1	19	2	12	1	9
Kentucky & Indiana	1	1	4	1	19.5	1	11.5	1	9.5
Michigan	7		2	0	19	2	11	1	9
West Virginia		8		0	19	2	12	—	—
Georgia		1	6	0	20	2	11	2	8
Alabama			7	1	20	4	11	2	9
Florida	2		—	—	—	—	—	0	7
Mississippi			2	0	22	0	10	0	7
N. Carolina			3	0	20	2	10	0	7
S. Carolina			2	0	20	2	11	1	8.5
Tennessee	2		2	0	20	1	12.5	1	9
Virginia			4	0	20	1	12.5	1	10
Kansas	1			—	—	—	—	0	10.5
Louisiana	1			—	—	—	—	0	10
Oklahoma	1			—	—	—	—	0	11
Illinois	5			—	—	—	—	3	10
Nebraska	1			—	—	—	—	0	10
Minnesota	1			—	—	—	—	0	8.5
Wisconsin	4			—	—	—	—	2	8

— Information not given or not applicable as the case may be.

<sup>a</sup> Some of the announcements are "rural" ceilings and apply for the whole month of December. Such is the case, for example, with most of those for the New England states, in which one ceiling may apply to the entire state.

<sup>b</sup> Only those states are listed in which Florida white grapefruit were priced. States are arranged by OPA regions.

<sup>c</sup> The size refers to the number of grapefruit in a 1½ bushel box.

there is merit in attempting to show such differentials, it would seem that some uniformity in the mechanics followed could have been in effect at the end of almost two years of price control on

citrus. The summary of orange retail ceilings for those states in which Florida oranges were priced reveals anything but uniformity or consistency (Table 2). In the first instance there was no uniformity in the method of pricing. In the areas primarily served by California or where Florida competition was at a minimum, pricing was mainly by the pound. In the New England and New York<sup>15</sup> regions, dozen or per piece pricing was most prevalent. While either method is permissive under retail regulations MPR 422 and MPR 423, the latter practice was in direct evasion of Judge Vinson's directive to OPA of November 17, 1943. Why OPA should have abided by all other requests of Judge Vinson and ignored this one is difficult to explain. Perhaps a political analyst could give us the answer.

When prices were announced on a dozen or per piece basis, minimum weights by sizes were usually shown. The purpose was to prevent merchants from pricing small sizes at the larger size prices. Yet in many instances these weights were set so low as to permit merchants to sell a size 288 orange for size 216, if they chose to do so. In such cases they not only had their legal mark-up but an additional 6 dozen of oranges to sell at the price of a 216. Such could not happen under pound pricing. Obviously, the lowest of minimum weights is not reflected in the averages by states, but the range in weight among ceiling announcements is some indication. One wonders why there should be a variation of 1 pound and 7 ounces in a dozen of size 200 oranges in Pennsylvania or why, on the average, a dozen of such oranges should weigh 10 ounces less in New Jersey than Pennsylvania? In some instances such discrepancies may result from mechanical errors and lack of coordination, but many are due to administrators who are sensitive to a retailer now and then complaining about a low weight package, when it is the average weight that should be considered.

As was previously mentioned, the real purpose of numerous community ceilings is to reflect freight differentials from point of origin to areas of consumption. This is to insure that a commodity will be widely distributed and not concentrated in certain markets because of price control. Apparently OPA did not wish to recognize that historically in periods of short supply or high prices starvation is the rule rather than the exception in certain markets. This is

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<sup>15</sup> Since December 7, 1944, all regions except New England and the St. Paul-Minneapolis area, have shifted to pound or dozen and pound pricing. This was accomplished only after much prodding by the industry.

true in low income and rural areas. If mechanics are to be provided to insure equitable distribution, has the objective been obtained? Certainly the differentials in price by states do not indicate such. As of December 7, 1944, one wonders at the basis for an average of 9 cents per pound of oranges in Michigan and an average of  $9\frac{1}{2}$  cents for Ohio. Or why should the average price for Virginia be one-half cent higher than for Michigan? Again, why should there be a price of  $9\frac{1}{2}$  cents per pound in Wisconsin and  $10\frac{1}{2}$  for Illinois? Florida oranges in Idaho (probably none got there) were priced at the same average retail figure as in New York, Pennsylvania and Oklahoma. One also wonders, even admitting that it costs to job fruit into small towns, why there was a retail price ceiling range of 3 cents per pound or \$2.52 per box within Alabama (Table 2).

For Florida white grapefruit the pattern is equally as bad. The per pound price was the same in Wisconsin as in Georgia. Nebraska was the same as Pennsylvania, New Jersey, New York and Virginia. Illinois merchants on the average could charge 2 cents a pound more for grapefruit than Wisconsin merchants. Within Illinois there was a variation of approximately \$2.20 per box among communities (Table 3).

With such being the case, can one successfully defend the thesis that neat differentials must be worked out, in which a multitude of workers is involved, in order to insure equitable distribution? More equity could have been obtained had the country been zoned into about two or three areas with a uniform ceiling established for each area. Then market forces could have played some part in getting equitable distribution. Instead it appears as though unknowingly and unintentionally on the part of OPA, distribution has been hampered.

To some extent these discrepancies may be attributed to differences resulting from "urban" and "rural" community ceilings. Proponents of "urban" pricing have shown much concern over the "great" inflationary tendencies if "urban" ceilings are not used to reflect current wholesale prices. Yet one wonders if the trouble of computing prices weekly, instead of monthly and without sampling wholesale prices as is done for "rural" ceilings, is worth the effort and the consequent disruption of market forces. In New York City, one of many places where the "urban" technique has been practiced, it appears that the "rural" method would have been effective. In Figure 2, three different retail price ceilings are converted to a box basis, for New York City. Line (1) represents OPA

"urban" community ceiling prices. Line (2) is a "rural" ceiling computed by assuming full f.o.b. ceilings and the maximum mark-ups permitted under MPR 426 and MPR 423 for distributive interests. Line (3) is based upon the New York auction price and reflects the same mark-ups as for line (2). Other than for a reflection of the late November decline in prices, the OPA "urban" community ceilings might better have been handled on a "rural" basis. The data also show that wholesale prices were not pushing ceilings as consistently as some officials seem to believe.

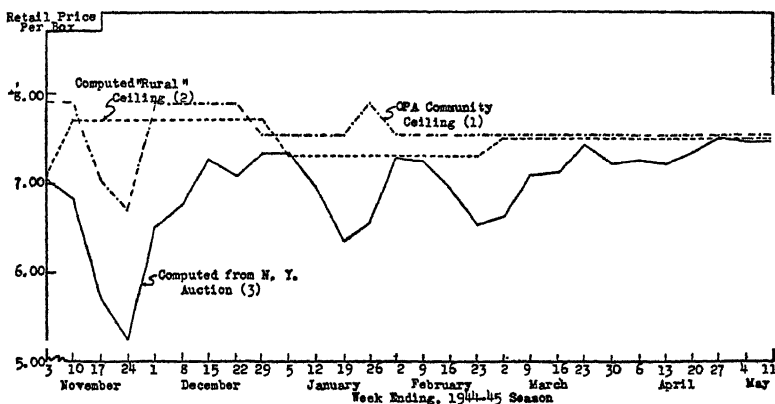


FIG. 2. COMPARISON OF OPA "URBAN" COMMUNITY CEILING PRICES FOR FLORIDA ORANGES IN NEW YORK CITY WITH TWO OTHER METHODS OF COMPUTATION, 1944-45 SEASON THROUGH MAY 11, 1945

- (1) OPA ceiling prices per 5 pounds converted to a box of 84 pounds.
- (2) Computed by same method as shown in Table 1 with adjustments for damage suffered in Oct. 19, 1944, hurricane.
- (3) Weekly N. Y. auction price plus maximum wholesale mark-up of 58 cents 17 of 75 cents taken through auction) plus 39 percent markup for retailer.

There are at least two disadvantages to "urban" ceilings. One is that local pricing officials in sampling wholesale prices will get prices out of line between two or more community pricing areas which are in the same market area.<sup>16</sup> The other is that it needlessly entails additional work on pricing officials. The more detail involved, the more opportunity there is for mechanical errors which not infrequently cause confusion in the trade.

However, dismal the outcome of the mechanics followed in establishing community ceiling prices has been, in all fairness it

<sup>16</sup> See Tables 2 and 3.



should be recognized that a goodly portion of the discrepancies mentioned are neither deliberate nor do they show lack of good intentions on the part of pricing officials. In fact, the writer would like to pay tribute to the earnestness and sincerity of employees in the regional and national offices of OPA in their attempt to handle the complicated job handed them by policy makers in the Washington office. The record merely reveals that the objectives in the regulation are greater than a mechanical system can attain even in a two-year period.

*Price Ceilings Should Be at Retail Level Only*

What then is the alternative? Many would quickly reply that fresh fruits and vegetables should never have been brought under price control. Admitting that there are excellent arguments favoring this thesis, they lie outside of an examination of the framework within which a commodity is controlled. The most feasible alternative was first advanced by the citrus industry and at a later date by the apple industry of the nation. *It is that ceilings on fresh fruit and vegetable perishables be set at the retail level only.* To each suggestion OPA officials stated that it defied the experience of price control. The industry recommended that ceilings be computed in much the same manner as has been done, except once retail levels were computed prices be "rounded" for large geographical areas and all other levels of control be ignored.

The major criticism of a retail ceiling only is that it will squeeze the distributive interests. This is readily granted and would be valid if one assumes that fresh fruits and vegetables were in short supply throughout the year or if there were no violent fluctuations in supply within very short periods. But the facts do not justify such an assumption. In much of the period of price control on fruits and vegetables, supplies have been such as to result in below f.o.b. ceilings. At times, f.o.b. prices have fallen below the cost of harvesting on some vegetables. However, retail prices, as has been so universally observed, have generally held at ceiling giving such a generous margin to distributors that they could well afford to be squeezed in periods of short supply. On the matter of squeezes, Segal and Hoffman make a most illuminating statement, though they were no doubt considering commodities where squeezes are more serious than for fruits and vegetables.

"Under price control a squeeze was almost universally, and often correctly, attributed to the seller's maximum price. But a great many sellers have

tended to forget that the price control squeeze has to a considerable extent merely replaced previous squeezes. Apparently, it did not matter that a given seller had been losing money for years. With the advent of price control the onus was promptly fixed on the Office of Price Administration."<sup>17</sup>

It would thus appear that OPA could not withstand the "squeeze" complaints. As a consequence, the price ceiling mechanism on fresh fruits and vegetables bears a striking resemblance to the NRA program. Ceilings, as now established, not only protect but they keep inefficient distributors in business. The OPA has repeatedly stated that price control insofar as possible must not disturb the normal channels of distribution and trade practices. One of the most normal practices in the fruit and vegetable trade has been for a large number of distribution interests to go broke each year. With the margins granted and the legal protection given this opportunity has been largely denied.

In non-perishable commodities where the over-all supply situation is such as to afford a continuous squeeze on wholesalers and retailers, the validity of price control at levels in addition to retail is well recognized. But in the case of fresh fruits and vegetables, there are such violent shortrun fluctuations in supply as to warrant flexibility rather than fixity of ceilings at the f.o.b. or farm level. Such flexibility can be obtained with retail ceilings only. Throughout a season equity will be obtained by the distributor, since low margins because of squeezes in periods of short supply will be offset with high margins in periods of greater supply. In the case of citrus for the past two seasons, the length of the period when prices at the f.o.b. level were below ceiling levels were such as to permit distributors to obtain adequate margins with a retail ceiling only.<sup>18</sup> It is readily granted that at the beginning and the end of the citrus season distributors, both wholesale and retail, would have their margins squeezed. But those periods would be short in comparison with the long periods in which country shipping prices would be below ceiling. Furthermore, these seasonal squeezes are the rule rather than the exception in the normal handling of fruit and vegetable perishables.

Equity for the grower is more nearly realized with a retail ceiling only, because f.o.b. prices can fluctuate to some extent in accord-

<sup>17</sup> Segal and Hoffman. *Op. cit.*, p. 25.

<sup>18</sup> With f.o.b. prices which have prevailed, consumers might have paid, on a season average basis, less for citrus fruit without any ceilings than under the "sticky" influence of community ceilings.

ance with widely fluctuating supplies. Producers of fresh fruits, and more particularly vegetables, rely upon prices over a short period for the success of a season's operation. For example, a producer of snap beans with an estimated picking season of four to six weeks usually contemplates a week or more of good prices to carry the bulk of his expenses for the season. If this price is forbidden and for the remaining three to five weeks he has to sell at below ceiling levels, which is so frequently the case, equity as to his customary method of operation has been denied. Yet when denied, he customarily finds his produce, which has sold well below f.o.b. ceilings going at, or even above, ceiling levels to the consumer. To a lesser but equally real extent the same situation prevails for all fresh fruits. If OPA policy making officials could see the wisdom and the fairness to both distributors and producers in a retail ceiling only, and then adopt it as a policy for all fresh fruit and vegetables they would have to spend far less time before congressional investigating committees and industry committees. Such a move would be vigorously opposed by certain elements of the wholesale and retail trade. In fact, there is such comfort in operating under a profitable government granted monopoly that one frequently encounters propaganda to make price control permanent.

### *Conclusions*

After almost three seasons of price control on fresh citrus there is still a need for reconciling objectives with suitable mechanics. The present regulation provides for excessive margins to the wholesale and retail trade. Furthermore, the practice of establishing several levels of control, which is a part and parcel of excessive margins, is not suited to production and marketing problems confronting producers of fresh fruit and vegetables. A more suitable mechanism would be to accept retail ceilings as now established, round them for broad geographic areas, and abolish all other levels of control. This technique would permit equitable margins, on a seasonal average basis, to wholesalers and retailers in view of the present volume of production. It would give producers a flexible f.o.b. price which is essential in fresh fruit and vegetable production. Finally, consumers would receive as fair treatment as under the complicated ceilings now in effect, since, to a large degree, f.o.b. prices below ceiling levels are not reflected in the consumer price.

## A PROPOSED WORLD TRADE BOARD FOR EXPANDING INTERNATIONAL TRADE

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THERE has been a great deal of discussion in recent months of the need for wider international economic collaboration and a greatly expanded world trade. How this possibly might be brought about is the central focus of this discussion.

When the war ends the economies of all the important industrial and trading nations of the world will be in varying degrees of dislocation and maladjustment. The belligerent nations particularly, will find their resources preponderantly geared to war purposes and generally under strict allocation and control. Production will be greatly overextended in some lines, pushed to uneconomic limits in others, and overreduced in still others as a result of the intercommodity distortions and geographic shifts in demand arising out of the war. Stocks of a number of strategic raw materials also will be in excess supply; prices, wages, and rents will be under control; and both producer and consumer subsidies as well as rationing of many commodities will be in effect in most countries.

International trade likewise will be in a strait-jacket with import quotas, export embargoes, and licensed or state trading generally prevailing. Price relationships between nations will be greatly distorted, foreign exchange rates unstable, and inflation, in some countries, proceeding unchecked. All the important belligerents, furthermore, will have increased their internal debt; some both their internal and foreign debt; and others will have shifted in status either from a creditor to a debtor nation or vice versa. Moreover, most of the countries will still be saddled with the same restrictive laws, tariffs, milling restrictions, quotas, embargoes, exchange controls, and other restrictive devices that were in effect in the period just preceding the outbreak of the war. Some countries, however, will be in a position to start virtually with a clean slate as a result of new constitutions or revamped governmental structures.

In addition to this intricate array of controls and maladjustments, practically all nations will be faced with certain special problems. One immediate problem that will confront the United States, for example, is how to make available capital and credit to other member states of the United Nations under such conditions

and terms that will contribute most effectively to their recovery and reconstruction and to an expansion in world production and trade. Closely related to this is the additional problem of controlling or guiding the spending in the United States of credit advanced or of large dollar balances already owned by certain nations, without unduly disturbing or up-setting our own internal price and credit structure. An even more important problem is the terms and conditions to be negotiated with other participating nations with respect to the disposition of the whole Lend-Lease question. Other nations will have problems equally intricate and important to them.

Presumably it will be the policy of most nations to relax and eventually remove altogether, those controls which have been induced directly by the war. Such internal wartime devices as supply and allocation control of materials, ceilings on prices, wages, and rents, consumer rationing, etc., undoubtedly will be removed just as rapidly as conditions will permit. There also likely will be a relaxation of shipping and navicert controls, and of war-induced quotas and embargoes, as well as of all of the types of controls exercised by the Joint or Combined Boards during the war.

It is not these types of controls, however, with which there is so much concern when considering the problem of expanding world trade. To be sure, they will influence the international movement and exchange of goods so long as they are in effect; but since, for the most part, they are based on emergency legislation their effects necessarily are likely to be temporary. The problem rather centers in those controls and trends of a more permanent character which had been established and more or less accepted as national policy in the several nations in the years preceding the outbreak of the present conflict.<sup>1</sup>

During these years, and even before, the general trend throughout the world, however, had been toward increased management and control not only of the various internal economies, but also of international trade itself. In the United States, for example, this trend toward central management and control historically was first exercised by the business group through the organization of monopolies, holding companies, interlocking directorates, etc. This

<sup>1</sup> In this connection it should be remembered that the decade of the 1930's was, in general, a period of depression. Some nations undoubtedly looked upon some of the controls instituted during these years only as temporary expedients to meet the highly abnormal and unstable conditions that prevailed.

trend toward collective action and group control in business was followed later in labor and agriculture; in the former by the enactment of state and federal legislation relating to child labor, minimum wages and hours, and other conditions of employment, as well as by the establishment of strong national labor organizations, craft unions, etc., and in the latter also through organizations and by the enactment of strong facilitating federal legislation. Much of the same type of development took place in other democratic nations. In the dictator nations the developments in these directions were even more pronounced. These internal controls in most all capitalistic countries, furthermore, were accompanied and supplemented by numerous external control devices, tariffs, bilateral trading, international cartels, etc.

Whether or not we have an expanding economy and a greatly accelerated world trade in the postwar era will depend, in major degree, upon what we and the rest of the world do about these things.

### *Which Direction Will We Go?*

Will the United States and the other nations of the world maintain these various internal controls and resume the extreme nationalistic and autarchic policies followed just preceding the outbreak of the war? Or will we move toward freer trade and wider international economic collaboration? If the move is toward wider economic collaboration will the governments of the respective nations still exercise considerable control and management or will they move in the direction of the type of policies and trading that generally prevailed in the period a quarter of a century or more just preceding World War I?

Much of the discussion of this subject in recent months has been based on the expressed or implied assumption that the world will move in the direction of freer trade and wider international economic collaboration. The evidence that such a development will come about in the immediate postwar years, however, is by no means conclusive. There are some grounds for believing, to be sure, that the world will not go back to the extreme autarchic policies of the period immediately preceding the outbreak of the present war. The declarations and commitments in the Atlantic Charter, and the Master Lend-Lease Agreement, and, more recently, the declarations and proposals of the United Nations made at Hot Springs,

Bretton Woods, Dumbarton Oaks and San Francisco all point in this direction.

On the other hand, there have been other developments that point to a continuation of certain of these controls at least in the immediate post-war years. The United States, for example, has made definite commitments to maintain agricultural prices for a number of products for two years after the end of hostilities. Britain also is committed to a definite program covering production and prices of certain products which carries through 1948, and, in addition, has concluded certain long-term contracts with overseas suppliers. Canada, likewise, has recently established a board with fairly general authority to support agricultural prices in the post-war transition period. Other countries either have state trading as a continuing cornerstone of their national economies or have resorted, or will resort, to it in handling certain commodities.

It may be, of course, that commitments such as these will be withdrawn as soon as the difficult adjustment from war to peace has been made. But regardless of how desirable some may think this to be, there is not much evidence, at least in the United States, that this is likely to happen anytime soon. We, of course, undoubtedly will have to modify and reduce downward some of our extreme agricultural loan and support price rates, or possibly even to modify our method of approach to the agricultural problem, but we are not likely to reverse over night an agricultural policy that has been evolving for the past quarter of a century.

On the industrial and labor fronts the situation appears to be pretty much the same. There certainly is no assurance that we will reverse the trend toward centralization and collective action and return to the type of policies that generally characterized the economy prior to World War I. The trend, in fact, in all of the important industrial nations of the world during the past several decades has been in the opposite direction. That there will be a rapid reversal of this trend in the immediate period ahead seems remote indeed.

If the nations of the world then are not likely to go back either to the extreme autarchic policies of the immediate prewar period or to the relatively free-trade policies of the last century, what policy will they pursue? Obviously, it will be a policy that falls somewhere in between these two extremes.

It would appear reasonable to assume, in the light of develop-

ments at San Francisco, that the world is definitely headed toward much closer political and economic collaboration among nations than prevailed before the war. This does not mean, however, that the individual nations necessarily will relinquish internal controls or forego making their own decisions on internal policy. It means rather that individual nations will tend increasingly to develop their internal policies and programs in a general framework of international collaboration and in line with mutually agreed-upon international policies and programs.

How, then, can an expansion in world trade be brought about under a system of internal controls of the several national economies? Under what conditions will the several nations be willing to modify and adjust their tariffs, their quotas and other external and internal controls so that an expansion in production and trade can be achieved?

*Some Approaches That Have Been Tried or Suggested*

Various proposals have been made for expanding international trade. Among the many approaches that have been suggested probably the one that has been most widely discussed and publicized, particularly in the United States and Britain, is the proposal which so long has been accepted and advocated by most economists. This proposal, as is well known, calls for a general lowering or abolishing of tariffs, quotas, embargoes, and other restrictions to trade and a general movement toward free exchange of goods between countries. In theory, under this system, each country would produce those products in which it had either an absolute or comparative advantage and would exchange them for the products most efficiently produced in other countries. Presumably, such an exchange would bring about an increase in trade advantageous to all countries and at the same time promote the most efficient utilization of world resources. Although unilateral action is sometimes implied, the implementation of this approach presumably would be accomplished through international conferences or multilateral conventions in which the several nations would sign a blanket agreement to decrease or abolish tariffs, eliminate trade restrictions and discriminatory trade practices and generally move toward a freer exchange of goods.

A second approach and one that has been used by the United States in recent years, is the reciprocal trade agreement approach.



This, unlike the approach just discussed, involved the negotiation of agreements country by country. These agreements in addition to the general provisions with respect to fair trade practices, discriminatory treatment, etc., focus directly upon individual commodities and products and indicate specifically the changes in tariffs, quotas, etc., agreed to with respect to each. Although these agreements are negotiated bilaterally, their benefits are extended multilaterally to all like-minded nations through the most-favored-nation clause.

A third approach is the commodity agreement approach. These agreements are on an individual commodity basis but usually are negotiated multilaterally. They have been traditionally used by groups of producer nations for commodities when the supplies available for export have tended to outrun the quantities the importing nations were willing to import. Through their use the export nations have sought to stabilize or increase the price of such commodities either through control of exports, which were sometimes accompanied by efforts to control production, or through some buffer-stock arrangement of storing and disposing of the surplus. In more recent years an attempt has been made to broaden this type of agreement to include importing as well as exporting nations. The current international wheat agreement to which we are a party typifies the new approach.<sup>2</sup>

Other approaches that nations have used to expand their trade are straight bilateral trading, or the establishment of custom unions, or negotiation of empire preferential agreements. Such benefits that derive from these types of arrangements accrue only to the participating nations since they all exclude the most-favored-nation clause.

An additional approach is outright state trading. This approach, of course, is used exclusively by Russia today because of the nature of her state controlled economy. It was used extensively by the Axis Nations during the 1930's and in varying degree by most all nations in time of war. State trading in specific commodities also has been resorted to by many nations on numerous occasions to implement two-price systems by subsidization and dumping and to carry on outright barter schemes.

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<sup>2</sup> Proposals for an international organization to deal with commodity agreements have been under extended discussion between the United States and the United Kingdom and were recognized in the Hot Springs Resolutions and the proposals for Food and Agriculture Organization.

Of these approaches the first three appear to offer the most promise for bringing about a sustained expansion in trade by the capitalistic countries. The situation with respect to Russia, of course, is different. By the very nature of her economy she necessarily will continue state trading.

Obviously, outright bilateral agreements without the most-favored-nation clause to extend benefits to other nations are not likely to encourage an expansion in the trade of the nations not parties to the agreements. To the extent that such trading results in expanding production in the two countries of commodities that could be produced more advantageously elsewhere, it actually may retard rather than encourage the total trade of the world. Empire preferential and custom union schemes are an extension of the same idea and hence fall into the same category. They obviously may promote trade temporarily among the nations that are parties to the agreement. However, their effect upon the trade of the rest of the world will be negative so long as they fail to extend the lowered tariffs and other concessions multilaterally.

Conceivably under a system of state trading participated in by all nations it theoretically would be possible to bring about an expansion in world trade and do it just as rapidly (or possibly even more so) than under a system of private trading. Or the same thing might be accomplished by a combination of state and private trading. However, there now is little evidence to indicate that the capitalistic countries have any intention of establishing a state monopoly of foreign trade in all commodities; although such trading in certain commodities in some countries may be carried on. Should the Bretton Woods proposals be turned down or should the international security organization not work out as well as now anticipated, it is possible that we may see a great deal of state trading in some countries. Unless the state trading that is done by the capitalistic countries is conducted in a framework of agreed international collaboration, however, it could easily thwart rather than encourage an expansion in world trade.

If then neither straight bilateralism nor state trading are the direction we want to go, what about the other approaches? What possibilities do they hold for an expansion in world trade?

Multilateral conventions and bilateral reciprocal trade agreements with the most-favored-nation clause, of the character discussed in the first two approaches, obviously, are in the right direc-

tion. They both recognize the need for a lowering of tariffs and a general relaxing of restrictions throughout the world if an expansion in trade is to be achieved. They both also recognize the co-operative nature of the undertaking, that is, that their provisions must have multilateral acceptance, and be non-discriminatory in nature.

While there is not much probability that the nations of the world are going suddenly to relax all their tariffs and other controls and go over entirely to a free trade basis, there are many indications that they want to move toward freer trade than prevailed in the inter-war period. However, the lengths to which they possibly will go will depend in considerable degree upon the methods of negotiation that are used. A "One Big International Conference" approach to get all nations to agree to a blanket reduction in all tariffs, and to a discontinuance of all quotas, subsidies and other restrictions simply is not feasible or practicable. All tariffs and other controls obviously are not equally restrictive. Furthermore, few, if any, countries are likely to abolish all tariffs completely. Many will want to retain, and rightfully so, many tariffs for revenue purposes only. Others, particularly those countries which have felt the influence of the Industrial Revolution least and which are now particularly desirous of promoting wide industrial expansion within their own borders, may want to increase some of their tariffs and institute temporarily other controls in order to equalize the competitive advantage now enjoyed by the more industrially advanced nations. Recognizing these elements of the problem, each nation consequently will want to know in specific terms what it is getting in return for what it gives up. In other words, each nation will be disposed to negotiate on a quid pro quo basis. This clearly is not likely to be accomplished, as it were in one sitting, at a big international conference. It will require negotiation of many specific items and necessarily will extend over a considerable period of time.

This points to a method of negotiation similar to that used in the reciprocal trade agreements, except that it would be on a multilateral rather than a bilateral basis. It should be possible to move in this direction and still keep the negotiations within manageable proportions. The trade liberalizing effects of an agreement negotiated in this way could be extended to countries not participating in the negotiations by the inclusion of the most-favored-nation clause.

Expansion in either total production or trade obviously may involve the redirection and reorientation of production in the different countries as well as either the contraction or expansion of individual commodities. It also will involve measures for handling products or stocks that are in excess supply. The international commodity agreement can be a useful device for these purposes. But such agreements need to be geared into and made an integral part of an over-all multilateral arrangement involving agreement upon imports, exports, (including quotas, if any) tariffs and exchange rates, shipping arrangements, etc. with respect to all goods and services if they are to contribute most effectively to an expansion in total production and trade.

Commodity agreements negotiated in isolation (i.e., without due regard to other related problems of the economy) have tended in the past to restrict rather than expand production and trade. These agreements were negotiated almost exclusively by exporting nations for specific commodities with the primary objective of reducing production and increasing price or of stabilizing and disposing of excess supplies. As such they were restrictive in character and largely ignored the interests of importing nations. By establishing production and export quotas, largely on historical bases, they, furthermore tended to freeze existing patterns of production and to retard, if not prevent altogether, desirable shifts in output from high cost to low cost areas.

In the recent past, as previously indicated, an attempt has been made to free such agreements of some of these bad features, particularly to bring consumer as well as producer nations into the negotiations. Our present wheat agreement is a case in point. But if this agreement is to contribute materially to a total expansion in world trade in wheat, it must be accompanied by a redirection of resources away from wheat to lines of production that are more economic in the principal importing countries and in some of the exporting countries as well. Otherwise it simply may result in the perpetuation of a slightly modified status quo.

Before either importing or exporting nations can be induced to make such shifts, however, they must have assurance that there are profitable outlets for the products to which they would turn. They, likewise, cannot overlook the effect such shifts would have upon their balance of payments and upon their general exchange position. Such questions can be resolved only when agreements are

negotiated in a framework that takes all of these related problems into account, hence, the importance of gearing such agreements into wider multilateral and multi-commodity arrangements. Handled in this way, commodity agreements can make a real contribution to a total expansion of production and trade.

### *An Alternative Approach*

If the foregoing appraisal of the several proposals for expanding trade is correct in its major essentials, what suggestions does it offer for developing a more effective approach to the problem? The discussion which follows is directed to this question. It attempts to show how elements of several of the approaches which have been discussed in the preceding pages can be integrated to form a unified and consistent program for the expansion of international trade.

*Basic Assumptions*—Underlying this plan of action are certain basic assumptions. The first is that an effective international political organization to maintain the peace and prevent future aggression will be established, along the lines laid down at the Dumbarton Oaks Conference and at San Francisco; and further that the several nations, relieved of fear of aggression, will be willing to abandon nationalistic policies of self-sufficiency and to cooperate on economic matters.

Along with this assumption of wider political and economic collaboration is a second assumption that the several nations of the world will be reluctant to relax controls until they have reasonable assurance of the effectiveness of the political organization for maintaining the peace, hence, the lowering of tariffs and other restrictions to trade, both during the transition period and later, at best will be a slow process; and, further, that progress will be more rapid through a quid pro quo bargaining process than by an over-all blanket approach.

Related to this is a third assumption that since every nation must guard continuously its exchange position (ultimately balancing total imports of goods and services with its exports) trade arrangements involving changes in tariffs, quotas, etc. need to be negotiated in a framework in which all of the related problems of the economy are taken into account.

Since agricultural and industrial raw materials make up such a large proportion of the international trade of the world, there is the

further assumption that a program which will provide for the orderly handling and disposal of such materials temporarily in excess supply and which will go further and seek to prevent such supplies from accumulating in the first place (through shifts, in production from high-cost to low-cost areas and through promoting the exchange of products most efficiently produced in one country with those produced in other countries) not only will go a long way toward stabilizing the price and increasing the trade and consumption of such materials but will promote, at the same time, total trade and employment throughout the world.

With these assumptions in mind, let us now consider how wider economic collaboration might be achieved among the several nations of the world to bring about an expanded world trade.

*Section 7 of the Master Lend-Lease Agreement the Starting Point—*

The first hurdle to overcome in achieving an expanded world trade is to get the nations of the world to agree to work together to this end. The basis of such an agreement is to be found in Section 7 of the Master Lend-Lease Agreement. Section 7 read as follows:

"In the final determination of the benefits to be provided to the United States of America by the Government of . . . . . in return for aid furnished under the Act of Congress of March 11, 1941, the terms and conditions thereof shall be such as not to burden commerce between the two countries, but to promote mutually advantageous economic relations between them and the betterment of world-wide economic relations. To that end, they shall include provision for agreed action by the United States of America and the Government of . . . . ., open to participation by all other countries of like mind, directed to the expansion, by appropriate international and domestic measures, of production, employment, and the exchange and consumption of goods, which are material foundations of the liberty and welfare of all peoples; to the elimination of all forms of discriminatory treatment in international commerce, and to the reduction of tariffs and other trade barriers; and, in general, to the attainment of all the economic objectives set forth in the Joint Declaration made on August 14, 1941, the Atlantic Charter.

"At an early convenient date, conversations shall be begun between the two Governments with a view of determining, in the light of governing economic conditions, the best means of attaining the above stated objectives by their own agreed action and of seeking the agreed action of other like-minded Governments."

With the United States and fifteen other leading nations of the world already parties to this agreement, it furnishes at once an acceptable basis for international economic collaboration. The first step, hence, is to get *all* the United Nations to agree to accept

its provisions as the basis of their international economic policy.

*International Trade Conference and World Trade Board*

Probably the most feasible way to get all of the United Nations to adhere to this agreement would be through an international trade conference, which could be called, after suitable preparation,<sup>3</sup> by the United States or some other interested nation. Such a conference would attempt to accomplish three things:

(1) To get *all* the United Nations to accept as a cardinal principle of their national policy the obligation to adopt and put into effect the measures needed (a) to expand total production, employment, and the exchange and consumption of goods, (b) to eliminate all forms of discriminatory treatment in international commerce, (c) to reduce tariffs and other barriers to trade, and (d) to take such other steps (including the registering and regulation of cartels) as may be needed to the general attainment of the economic objectives set forth in the Atlantic Charter and in Section 7 of the Master Lend-Lease Agreement.

(2) To explore ways and means, and, if possible, reach agreement upon general methods and procedures for managing and disposing of excessive stocks of agricultural and industrial raw materials that may have accrued and be in existence at the end of the war, or that may thereafter accrue, so as to insure their orderly movement into trade and consumption and to prevent them from becoming a burden to international commerce.

(3) To set up a permanent International Trade Council or World Trade Board to implement these purposes.

No attempt would be made at this conference to negotiate specific agreements, to adjust any specific tariff rates or import quotas or even to agree upon blanket adjustments in these and related items. Attention rather would be centered upon reaching agreement upon a broad general basis for economic collaboration and action in the field of international trade.

*Organization and Membership of the World Trade Board.*—The accompanying functional chart shows the general organization of

<sup>3</sup> A great deal of effort has been devoted to the problems of trade and commercial policy after the war. Numerous committees have been set up in the United States (both within and without Government) as well as in some of the other nations to consider and make recommendations on policy with respect to many of the more important issues involved. These materials and recommendations would furnish an excellent point of departure for the discussions at such a conference as is proposed.

the Board and how it would tie into the Economic and Social Council and with the General Assembly of the United Nations Organization proposed at San Francisco (see chart).

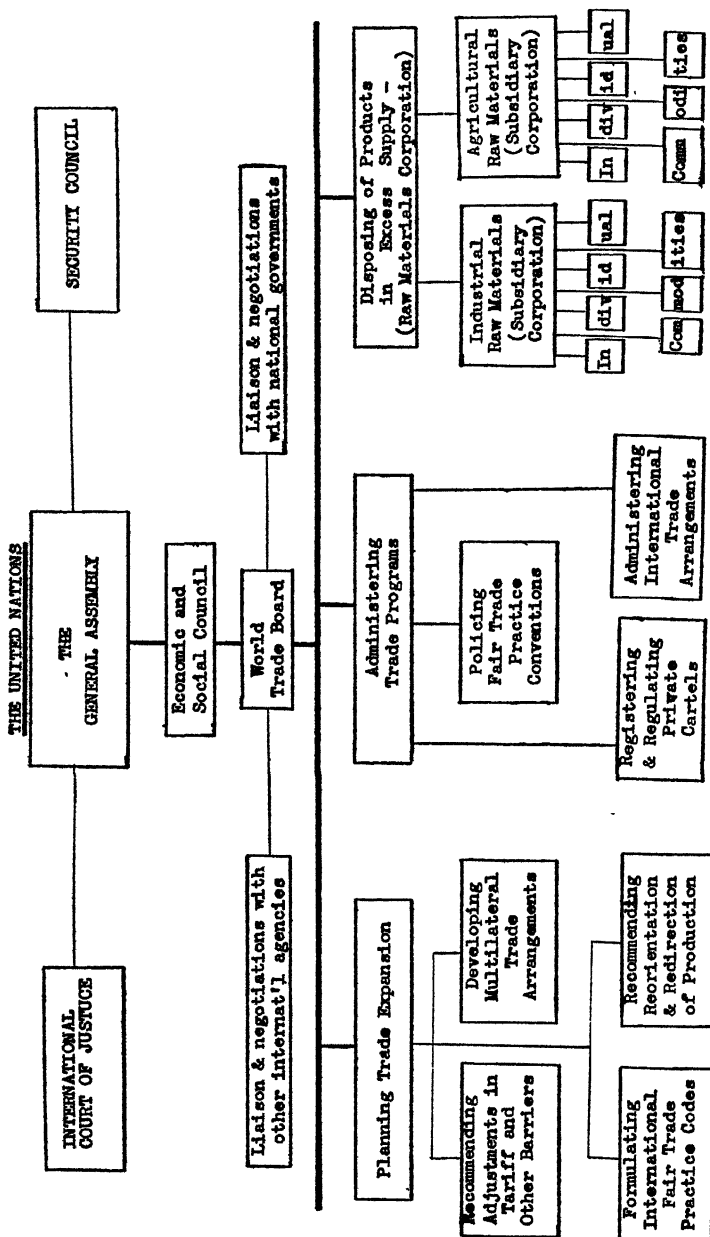
The members of the Board would consist of a selected number of representatives of the participating nations in the United Nations Organization. Possibly the most effective way to select the membership would be on the basis of the relative importance of the different nations in international trade, with a rotating membership provision similar to that proposed for the Supreme Council of the United Nations Organization.

The principal executive officer of the Board would be a Director General with appropriate staff and facilities for efficient operation. Under the Director General would be Deputy-Director Generals in direct charge of the different functions performed by the Board.

*Functions of the Board.*—The World Trade Board would have three primary functions (1) to explore continuously, ways and means for expanding international trade, (2) to register and regulate private international cartels and administer inter-governmental conventions and trade programs, and (3) to manage and dispose of agricultural and industrial raw materials in excess supply. In performing these three functions the Board, of course, would have to maintain very close relations with the governments of the several nations and with other international bodies such as F.A.O., International Investment Bank, Stabilization Fund, and other agencies still to be set up that have direct interest or pertinence to its operations.

*Trade Expansion.*—One of the primary functions of the Board would be to search continuously for possibilities of expanding world production and trade—whether by lowering of tariffs and other barriers to trade—by redirection and reorientation of production in the different countries—or by increasing the exchange of products most efficiently produced in one country with those produced in other countries. It would analyze continuously the pattern of trade and the exchange position of the different countries; prepare and keep current international balance sheets; and consider continuously ways and means of bringing the imports and exports of both goods and services of the different countries into balance. It would point the way toward implementing these trade possibilities by formulating international fair trade practice codes or conven-





FUNCTIONAL CHART OF PROPOSED WORLD TRADE BOARD—(SHOWING TIE IN WITH ECONOMIC AND SOCIAL COUNCIL AND GENERAL ASSEMBLY OF UNITED NATIONS ORGANIZATION)

tions; by developing and drafting exploratory multilateral trade arrangements among groups of the member nations for ratification by their respective governments; and by suggesting or developing other lines of action and procedures that would expand and coordinate effectively the production, trade and consumption programs of the cooperating nations.

Trade agreements would cover proposed changes in tariff rates, import and export quotas, milling restrictions, sanitary conventions, subsidies, and other matters, including exchange controls and rates, affecting the exchange of goods between or among the different countries. They also should include the most-favored-nation clause, so that their benefits could be extended to other like-minded nations not parties to a particular agreement.

After such exploratory trade agreements had been drafted they would be referred to the Director General and through him to the Board itself. Whereupon the Board, under the authority of the Economic and Social Council and the General Assembly, would if it saw fit invite the interested nations to designate official representatives to a trade conference for negotiating an agreement. Obviously, such arrangements might include several nations or only a few. They might be negotiated between nations in a broad general region such as the Western Hemisphere or Western Europe or they might be negotiated between nations in different regions such as between the important raw material and manufacturing nations. A particular agreement might cover a great many items or only a few. Of course, the greater the number of items covered and the greater the number of nations included, the greater would be the effect of the agreement.

*Regulation of Cartels and Administration of Trade Programs.*—A second function of the Board would be to register and regulate all private international cartels;<sup>4</sup> to police all international fair trade codes or conventions; and to administer all inter-governmental trade arrangements and commodity agreements. In order to make its actions effective, the Board should be clothed with authority by the participating nations to impose appropriate penalties against the goods either of private cartels or of governments moving in international commerce for non-compliance with agreed

<sup>4</sup> A great deal of the discussion in recent months has been strongly in favor of the complete abolition of cartels. Although such action undoubtedly would be desirable in the general interest, it is assumed here cartels will continue and that control will come through some form of regulation.

fair trade practices or with provisions of agreed inter-governmental arrangements.

Obviously, if the Board is to regulate private international cartels effectively, there, first of all, must be a definite understanding and agreement among the nations as to the nature and definition of a cartel. There next must be similar understanding and agreement upon what shall constitute fair trade practices—which cartel practices are to be permitted and which are to be outlawed. There finally must be agreement upon lines of action to be taken, including the type of penalties to be imposed, in case of non-compliance with agreed-upon trade practices. Presumably such penalties would be imposed by the participating governments. In extreme cases, all the participating governments might refuse entrance to their countries of the products of non-complying cartels. The several governments should also agree to regulate the domestic operations of any corporations operating as adjuncts of an international cartel. Coordinate machinery thus would have to be set up in the different countries to make such regulation effective.

Operating under such directives, the Board would require all cartels to register with it; to keep it continuously informed on their operations; to report immediately any change in procedures; and to conform to such rules and requirements as the Board might need to impose in discharging its responsibilities. Failure to comply with these requests or to conform to the fair trade practices agreed upon would cause the Board to call upon the individual governments to invoke the penalties indicated above.

Policing of international conventions relating to governmental trade practices and administering inter-governmental trade arrangements presumably would be much less difficult for the Board. The problem would be largely one of seeing that the different governments conformed to the agreement and advising with the Raw Materials Corporation as to developing surpluses and the need for, and timing of, its operations.

*Managing and Disposing of Products in Excess Supply.*—A third function of the Board would be the management and disposal of agricultural and industrial raw materials in excess supply. In order to discharge this function in an effective manner the Board would be authorized to set up an International Raw Materials Corporation with authority to enter into agreements or contractual relations with nations, corporations, cooperatives, or private individ-

uals to buy, warehouse, sell or otherwise manage and dispose of such materials that may be in excess supply when the war ends, or that may subsequently accrue, so as to insure their orderly movement into trade and consumption and to prevent them from becoming a burden to international commerce.

*Operation of the Raw Materials Corporation.*—Perhaps this phase of the Board's activities needs to be explained in somewhat greater detail. The Corporation, of course, would have a board of directors and an executive officer or manager. Inasmuch as it would handle both agricultural and industrial raw materials, it would have two subsidiary corporations, one to handle agricultural and the other industrial raw materials with separate programs developed for the individual commodities.

The central function of the Corporation would be to manage and dispose of products in excess supply. It would not attempt to stabilize or maintain prices at any fixed level, *except on a stop-loss basis*. It, hence, would not come into the market to make purchases and sales until an emergency situation developed. It would operate then to prevent a run-away price situation—to stop a descending price spiral before it reached a disastrously low level. Thus the effort would be to avoid all price stabilization operations except as a final resort to ameliorate hardship caused by extreme depression. The plan of operation for agricultural raw materials would be somewhat as follows:

At the beginning of each year or crop season, the World Trade Board, working through the manager and director of the Corporation and its subsidiaries would determine:

- (1) The general range within which prices of the different commodities likely would fluctuate in the event that the Corporation stayed out of the market;

- (2) Whether action by the Corporation was needed with respect to any commodity, and if so, the terms and conditions under which the Corporation would be willing to accept the commodity as well as the amount of the commodity which the Corporation would accept;

- (3) Ways and means of disposing of excess supplies which would not move in the commercial market, taking into account the stocks that would need to be carried as insurance or as buffer supplies against changes in yields or prospective increases in demand. This would call for consideration of sales of excess supplies at less than

the commercial price for special purposes, such as for improving nutrition, relief feeding, or for developing a new market for the commodity.

This procedure, it will be noted, permits considerable flexibility in operation. By giving free rein to market forces, except under conditions of extreme depression, scope would be left for private trade to operate. The Corporation would not buy or sell until an emergency situation began to develop. When stocks began to pile up the Corporation might take action along one of the following lines: (1) A part or all of the excess supplies might be stored for subsequent disposition, (2) the excess supplies might be disposed of at less than market prices by agreed-upon methods, (3) the excess supplies, in part or whole, might be made available to the low income groups of the various nations for use in improving nutrition or levels of living, or (4) the excess supplies might be used for relief feeding.

Concurrently with these disposal operations, which would seek to clear the market of excess stocks as rapidly and on as favorable terms as conditions would permit, other steps would be taken to encourage the different nations to redirect and reorient production and to take such other action as appeared necessary to forestall the reoccurrence of a similar situation. Here the commodity agreement would play its role. But if such agreements are to be fully effective in bringing about the adjustment in resources that would be required they would need to be geared in with and made a definite part of a wider multilateral and multi-commodity arrangement covering all important goods and services.

The stabilization and disposal operations, of the Corporation, obviously, would involve important problems in financing. Probably the most feasible way to finance such operations would be for the several nations to underwrite a revolving fund—in somewhat the same manner as for the proposed International Monetary Fund, or for the International Bank for Reconstruction and Development agreed to at Bretton Woods. Losses could be met by some agreed-upon formula worked out by the cooperating nations. They might be met, for example, by contributions from the various nations in the same proportion as their share of the fund, or by contributions according to the amount of the losses attributed to the commodities of the particular countries, or by some combination of these or other criteria.

*Relation of the World Trade Board to Other International Agencies.*

—The chart previously referred to indicates how the Board would be an integral part of the over-all United Nations Organization. It also indicates that the Board would have liaison functions to perform. These liaison functions would be particularly important in bringing about an expansion in world trade and in managing the operations of the International Raw Materials Corporation and its subsidiaries.

The Board, obviously, should work very closely with the International Bank for Reconstruction and Development and with F.A.O. in striving to achieve a redirection and reorientation of production in the different countries. It also would need to work very closely with the Stabilization Fund in appraising the effect of changes in trade upon the exchange position of the different countries and in devising ways and means for bringing about a better world balance of supplies available for import and export. It also would need to work very closely with F.A.O. in developing programs for distributing products in excess supply so as to gear them into and make them contribute most to the improvement of nutrition and better living standards in the different countries.

In addition, the Board, of course, would have to work very closely with the governments of the several nations. Since it would be the official international agency for handling trade problems, it necessarily would do a great deal of communicating and negotiating with the governments of the participating nations, particularly in calling trade conferences, in negotiating international fair trade practice codes, multilateral trade arrangements, and commodity agreements, as well as in controlling private international cartels, policing and administering inter-governmental conventions and trade arrangements.

*Recapitulation and Conclusions*

Expansion of international trade requires cooperative action among the nations. When relieved of fear of aggression, nations will desire to cooperate to this end but the lowering of tariffs and the removal of other restrictions to trade will be a slow process and can best be achieved through a quid pro quo bargaining process rather than by an over-all blanket approach. Since every nation must guard continuously its exchange position (ultimately balancing total imports of goods and services with its exports) trade ar-

rangements involving changes in tariffs, quotas, and the like, need to be negotiated in a framework in which all the related problems of the economy are taken into account. This means that they should be on a multilateral and multi-commodity basis.

The proposed World Trade Board as the implementing agency for achieving an expanding trade would be a cooperative international body. It would come into being through the joint efforts of the United Nations and would be the official international agency for handling trade problems. The Board would have three primary functions: (1) to explore ways and means of expanding international trade, (2) to register and regulate international private cartels and to administer inter-governmental conventions and trade programs, and (3) to manage and dispose of agricultural and industrial raw materials in excess supply.

At the outset the Board would not need to exercise all of these functions simultaneously or with all countries. It could confine its efforts in the beginning, for example, to developing suggestions for expanding trade; or it could center its attention on managing and disposing of commodities in excess supply. This latter function undoubtedly would have high priority in case the Board were ready to begin operations at the time or shortly after the fighting stops. In time, however, more or less continuous action in all three fields would be necessary for the Board to become an effective instrument in bringing about a sustained expansion in world trade.

Obviously, many difficult problems would arise in setting up such a Board, to say nothing of the difficulties it would encounter in actual operation. No pretense is made that all such problems and difficulties have been anticipated nor that quick and ready answers to them can be found. The purpose rather has been to sketch in broad outline a proposed method or approach to expanding international trade in the hope that it may contribute something toward an ultimate solution of the problem.

## AGRICULTURAL CREDIT POLICY IN THE UNITED STATES, 1945\*

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AGRICULTURAL credit policy and program for this country is again under discussion. Before this article appears in print, Congress and the President may have decided what to do with HR 3321, Congressman Flannagan's bill to consolidate all the Federal agricultural lending agencies under a seven-man board outside the Department of Agriculture. It may also have begun hearings on the new version of the Cooley bill proposing to establish a definite status and program for the Farm Security Administration, and on related proposals having to do with the government lending program as such.<sup>1</sup> The writer has been giving considerable attention to the subjects coming up in these later hearings, partly as a result of having been asked to do so by Mr. Chester Davis while he was War Food Administrator, and partly because of the strong interest in the subject of several members of his Seminar in Agricultural Policy in the Littauer School of Public Administration. It may be that he has been duplicating to some extent the work done on the subject by the Land Grant College Committee on Postwar Agricultural Policy. But that Committee was able to devote only 2½ pages to the subject in its report, and omitted altogether reference to some of its major aspects. Dr. Earl L. Butz's excellent article in the May issue of *THIS JOURNAL* discusses still other phases of the subject. If this article discusses any of the same topics as does Dr. Butz, it will be only to supplement what he has said, or in a few instances differ with him measurably.

The general student of credit may be startled to find Dr. Butz and the writer both proposing an expansion of the scope of public credit for agriculture, after all the legislation and developments in this field in the last thirty years. The simple fact of the matter is that since the First World War, and especially since the Big Depression, the role of credit in agriculture has developed so rapidly that credit agencies and credit legislation have not kept up with it.

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\* The writer was assisted by the staff of the Committee on Research in the Social Sciences of Harvard University. This is Publication Number 15 in the publication series of the Seminar on Agricultural Policy in the Littauer School of Public Administration.

<sup>1</sup> Both have now been deferred to the Session of Congress scheduled to convene in October.



There is an even greater lag in the prevailing ideas about the function of credit in agriculture. Dr. Butz's article suggests a program of loans for purchasers who have as little as 10 to 20 percent to pay down on the purchase of farms, something comparable to the FHA insured mortgage loans; loans to part-time farmers; improvement loans; and some revision of present lending methods. This article presents in addition the need for farm-enlargement loans, for woodland-development loans, as well as an extension of the present programs of the production credit associations, of the cooperative banks, and of the Farm Ownership or tenant-purchase branch of the Farm Security Administration.

### *Servicing with Loans*

Dr. Butz raises the point as to whether the term "credit" should be used to designate part of the new uses of loans in agriculture; in fact, as to whether even the term "loans" should be used. However, he offers no suggestion of other terms, and hence the present writer will keep on with the present practice.

Furthermore, serious question can be raised as to whether Dr. Butz's principle of classification is a workable one, and as to whether it does not confuse more than it clarifies. He would limit the term credit to loans that are "self-supporting." His idea is that if a public agency makes a contribution of any kind to a lending program, the term credit is a misnomer.

The most important single development in agricultural credit in the last decade has been the combination of technical help in planning for the use of a loan, and in the use of the loan funds subsequently, with the making of the loan. Little of this was in the picture before 1935. Only a few commercial banks went further along this line than occasionally to suggest that a loan would be acceptable if the program for using it were different. The Federal Farm Loan system based its loans on an appraisal of the farm more than of a production program proposed for it. It is true that a small number of commercial banks scattered widely over the country are now beginning to service loans in this same way, or are giving some part of this service. But our agriculture cannot afford to wait for our commercial banking system to develop these services. As a matter of fact, only if public agencies proceed vigorously with such an undertaking, learning not only how to make and service such loans, but more important, how to plan

successful farm production programs in all the different areas of the country, and in this way furnishing leadership and competition, will the commercial banks rise to the occasion.

The reader will note that the term "supervision" has not been used in the foregoing paragraph. Not only is the term an inaccurate description of technical aid in making farm production plans and in carrying out these plans, but it has misleading connotations. The term *servicing* will be used instead in this article, although it is in danger of being understood to include nothing more than the handling of collections and the like.

Now comes the question: Should this servicing be "self-supporting"? If the banks were to provide it adequately in due time, it would be paid for out of the interest which they collect. But there is a long period ahead when this servicing must be subsidized if it is going to be available to the extent needed. Moreover, there is question as to whether governmental servicing should not always be pushing out to conquer new frontiers, with commercial bank servicing following after as rapidly as the banks learn how to handle it.

No reasonable argument against subsidizing this servicing can be offered. It is the same kind of aid that is given farmers by the agricultural extension service. In fact, it is an unusually effective form of such aid—clearly superior to most forms of extension work—because of the manner in which it ties together a program of action and its financial support. Surely a government which is subsidizing a general program of agricultural research, adult education, farm planning for control of water and wind erosion, and of services to herd improvement associations and the like, can make no good case against helping farmers to plan farm and production programs for the use of credit.

The strongest statement can be made in terms of the AAA payments. If it is good national economy to spend a half billion dollars a year subsidizing attempts to shift production, there can be little doubt about the economy of spending as much as a tenth of this amount in helping to plan better farm production programs and helping with their execution. A million dollars spent on a good use of credit supplemented in this way could easily go farther in re-converting the South than ten times this amount spent on "benefit payments."

To classify as "soft" all those loans which benefit from con-

siderable servicing, and as "hard" those which will get along without it, or will pay for their own servicing, therefore blurs the real question, which is, in each case, *how much and what form of servicing are worthwhile, and how much servicing can government afford to subsidize.*

### *The Timing*

The enlargements and revisions of the agricultural credit program proposed by Dr. Butz, and in this article, are mostly not needed until after the war. In fact, to begin with some of them during the war would be a serious mistake. Those which are affected strongly by changes in the level of land values should proceed carefully until the time after the war when land values have become stabilized in this country. It is safe to make relatively few loans to buy or enlarge farms in the next two years at least, and of course only a few tenant-purchase loans. Present levels of land values may be sustained in the decade following the war, but prospect of this is altogether too uncertain to gamble on. Land values may even rise considerably higher during the next two or three years.

Some of the measures proposed, however, should be ready for use promptly at the end of the war. This requires that the necessary legislation be provided in advance, in time for the agencies to work out their methods and train the necessary personnel. This is especially true of loans for woodland development and to assist in reconversion. Moreover, the status, policies, and programs of what is now called the Farm Security Administration need to be settled as promptly as possible. Consequently, it is highly important that Congress take action within the next six months on the matters discussed in this article.

### *New Credit Agencies Not Needed*

It needs also to be made clear that no new public credit agencies are needed to carry out the measures here presented. All that is required is that the existing agencies be authorized, or instructed, to expand their programs along the lines here indicated. The writer while developing his ideas on this subject has corresponded with twenty agricultural economists in the Land Grant colleges and experiment stations, in some cases over several months. These economists were chosen because of their past interest in credit and

with a view to obtaining a good geographic coverage. Several of these correspondents began their first letter with a statement that the country now has all the public credit "facilities" it needs. Apparently a certain amount of confusion exists over the use of the term facilities. Although no new "agencies" are needed for the kinds of credit here discussed, unless the present agencies use their opportunities, the facilities do not really exist, at least from the standpoint of the farmers. Even an authorization to make a type of loan does not constitute a facility unless the authorization is used. Moreover, an authorization needs sometimes to be backed up by the provision of adequate loan funds before it can become a real facility.

### *The Functions of Public Credit*

Some misunderstanding will be avoided if the writer makes clear at the outset his position with respect to the role of public credit as distinguished from private credit. The most important function of public credit is to develop improved types of loans and methods which private agencies will later adopt. It seems to be in the nature of agricultural credit that competition among private lenders does not bring about the improvements needed, or brings them about too slowly. Governments the world over have found it wise to set up public agricultural credit agencies to lead the way and show how such credit can be better provided. In the process of doing this, they may incidentally furnish some competition for the private agencies, but this is not their primary object. The proportion of the loans to farmers made by public agencies should decline in the near future rather than increase. Private agencies have been lagging in the adjustment of their methods to the rapidly changing conditions of the last three decades. They should be able to catch up on this lag in the next ten or twenty years. Therefore, although filling in gaps in the present provision for credit may in some cases take some business away from private agencies at the start, it should very shortly increase the volume of private lending by its development of new uses for credit. It is significant in this connection that the most successful and forward agricultures in the world depend on credit more than do the distressed and backward agricultures. The farms of Denmark and Sweden, for example, are more than two-thirds financed on borrowed capital.

The second need for public credit in agriculture is to provide

needed capital for groups that can not be supplied it on a strictly banking basis. These groups can frequently be helped much more effectively and cheaply by carefully made and well serviced loans than in any other way, but the servicing may be too detailed, or the losses too large, to be provided out of the usual earnings of commercial banks.

The third use of public credit, and probably its most important use in the past in this country is to bale farmers out when they get into trouble because of severe agricultural depressions, drouths, and other disasters. The need for such rescue work will diminish greatly when adequate credit facilities have been developed, the terms of agricultural loans have been adapted to fit agriculture, and insurance has assumed its full role in farming. In the past, the private banks making loans to farmers have had to be baled out fully as much as the farmers. Doing their part in providing credit facilities that fit agriculture and that stand up in depressions and drouths is their most effective means of keeping government out of the banking business.

### *Farm Enlargement Loans*

The most serious gap in our present agricultural credit system is loans to enable farmers to get enough land to make an economic unit. You may say that farmers who already have farms have no difficulty in borrowing on a mortgage in order to buy additional land. This is true of those who already have sizable farms under small mortgages. But such farmers ordinarily do not need more land very much. The ones who really need it are those who already have mortgages on small farms and are having difficulty carrying even the mortgage which they have because their farms yield such small returns; or they are not mortgaged but their earning power is so low on their present farms that lending agencies do not consider them safe risks. Farmers in either of these situations are in a vicious circle. They are not able to borrow because they have so little resources; and only with great difficulty can they increase their resources without borrowing in order to get command of more resources.

Some way needs to be found of breaking into this vicious circle, and credit can be an instrument to this end. But it must be used as such an instrument with much care. A large fraction of the farmers in these difficult circumstances are too far along in years

to safely reach out and buy more land. Others of them are poor farmers, or at least can be made into successful farmers only with great pains. Others are unthrifty and improvident farmers. But in the midst of all these in an ordinary state are many thousands of relatively young men who need only to be given a chance in order to increase their earning power; and the next five years will bring along as many more thousands. If these can be helped, in twenty years we will have improved the earning power and increased the income of several hundred thousands of our good young men.

It is helpful to consider this problem in terms of the situation in different parts of the country. Strange as it may seem at first, there are many sections of the Midwest where the need for such credit is important. These are sections where the land is relatively poor and the farms are small. The tendency in this Midwest region is for the farms to be considerably smaller on the poorer lands than on the better lands. The situation in the two counties in central Illinois, discussed in the last issue of *THIS JOURNAL*, illustrate this point well.<sup>2</sup> One of them, Douglas, has rich prairie soils, and the other, Jasper, is dominated by clay hardpan soils. The average size of the farms in Douglas county is around 180 acres; in Jasper, around 120. The average value of products on the Douglas County farms in 1939 was \$3,600; in Jasper, \$900. The differences between these two counties can not be entirely made up by putting more land in the Jasper County farms, but it can be made up in large part in this way and by converting the agriculture more largely to a hay-and-pasture basis. If a program of lending money to deserving young farmers in Jasper County to enable them to buy more land were developed, and no more than two or three percent of these young men were helped each year, within twenty-five years about all the farms in Jasper County that need it will have been enlarged.

In large sections of the United States, the land is rough and only a small part of it can be cropped. The whole Appalachian and adjacent Piedmont region answers this description. The farms in this territory need to have more land so that they can keep more livestock and have larger incomes. The people living in this territory should not be forced to eke out a meager living trying to grow a few acres of corn and other food crops on steeply sloping fields. Many of these farms should also include sizable woodlands which would furnish employment at slack seasons of the year and

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<sup>2</sup> John D. Black, Notes on "Poor Land" and "Submarginal Land," p. 345.

furnish an additional source of income. This country is going to need timber badly in the next hundred years, and this is one of the best ways in which it can be provided.

The dairy farming regions of the Northeast and the Lake States also have many sections in which the farms should have more land so that more cows can be kept. Timber growing can be combined with dairying to excellent advantage in many parts of this region.

The South, of course, has more undersized farms than any other region. On its more level lands, the farms need to be enlarged so that they can grow their cotton with more machine labor and less hand labor and thus grow more of it. In the piedmont and hill sections of the South, the farms need to be enlarged so as to take in land that can be used for pasture and to grow feed for livestock, and many cases to combine timber growing with diversified farming. Much of the South is natural pine region where trees grow very rapidly and woodlands can provide important additional income.

The Federal Land Banks are now able to make loans for the enlargement of farms whenever the present farmer is in a position to carry an additional mortgage. However, 50 percent of the value of the land now in the farm, plus 20 percent of the value of the buildings, does not permit very much of a mortgage, and many of these farms are mortgaged already. Raising the loan limit to 65 percent, as provided in H.R. 2113, helps considerably, but it often does not help enough. Combining a first mortgage loan from a federal land bank with a Land Bank Commissioner loan, making possible a loan up to 75 percent of the normal appraised value of the farm, will help out still more if this arrangement is continued beyond the present one year limit. The Farm Credit Administration therefore has facilities for doing a great deal along these lines, *if it will make full use of its opportunities*. Perhaps it would do this if Congress in revising the existing legislation were to make a special point of designating this type of loan as one to be financed.

The young farmers who can not qualify for a FCA loan on the terms outlined can obtain loans under the Bankhead-Jones Act as that act is now being interpreted. However, any of its loanable funds which are so used reduce by so much the amount available to enable tenants to purchase whole farms. It would be well if the language of the Bankhead-Jones Act were rephrased so as to make it very clear that loans of this type are to be financed as well as tenant purchase loans, and an appropriation were made to cover these loans which is an addition to that for tenant purchase.

Following are excerpts from letters from several agricultural economists in agricultural colleges which deal specifically with this type of loan.

"Present arrangements are not designed to assist those who could use a larger farm to greatest advantage. It is comparatively easy for those who are already established on efficient-sized units to buy more land. It is also possible under the present Tenant-Purchase Program for a limited number of tenants to obtain favorable credit arrangements for the purchase of a farm. But the individual now fighting a losing battle against foreclosure on a small inefficient unit is in a hopeless position. He cannot obtain credit to correct the defect in his operating unit. Neither is he eligible for a Tenant-Purchase contract. He must continue to stew in the juice of his own mistakes or go through the benumbing process of failure and loss in tenure status before he can be given assistance. In other words, he must become a pauper before he is eligible for assistance. We believe that the Tenant-Purchase Program should be modified and expanded to assist the more worthy of such operators in obtaining the additional land or other resources necessary to efficient operation."

"There will be, and now is, a distinct need for the enlargement of family-size farms in this state. The low per-capita income in our state is in no small measure due to the operation of farms with out-of-date equipment and the following of old out-moded cultural practices. Present lending facilities are not adequate to meet the needs for this kind of adjustment. The old established credit agencies are prone to lend money on cotton production, but are extremely reluctant to extend credit for the development of dairying, livestock operations, and other types of farming because of their inability to appraise the risk involved. Some kind of a lending agency should be established that would not only provide credit, but would also provide supervision in the enlargement and adjustment of the small uneconomic farms. I think that it would be sound policy to expand the Tenant-Purchase program to include loans for the purpose of enlarging present small farms."

"I see no good theoretical reason for withholding aid in land purchase to the mortgaged owner of an inefficient small farm (inefficient because small) to make it an efficient unit, when such help is being given a tenant to enable him to purchase an entire efficient-sized farm. The owner may indeed be in greater need than the tenant."



"There is a real need in our state for the enlargement of family-size farms mainly because of increased efficiency resulting from rapidly increasing mechanization and partly from shifting to more general or extensive systems of farming following the decline of cotton production."

"One of the major problems in our state is the small size of the farm unit. A program to increase the size of the farm units would have a much wider application than the strictly tenant-purchase program as now set up. The trend is for the farmers with rather large units to increase the size of their farms and for the number of small farm operators to increase. There is ample credit available for farmers to purchase additional lands who own considerable equity in their farm business."

"It is really very difficult for capable young people without large capital to become established on good farms. Because there is little opportunity to rent a going commercial farm, the young people tend to purchase a cheap submarginal farm. They are then handicapped in their productive capacity and cannot acquire the capital needed for adequate production."

Not all of the economists, you may be sure, wrote in the same vein as the above. The points of view of the doubters can be summarized as follows:

1. The small farmers who cannot borrow to buy more land are poor managers and will not be helped by getting them more in debt. The farmer with management capacity larger than his farm can usually borrow at the bank; the bank will have discovered his latent abilities.

2. It is better to have smaller debt-free farms than larger farms with more debt, so long as we have no assurance that a depression will not develop. It is not a good move for small farmers without present access to credit to go out and buy more land.

3. Farmers are buying additional land at a rapid rate now. No more credit is needed.

### *Improvement Loans*

Objection was raised to loans to enlarge farms also by some who pointed out that this will reduce the number of farms, and who said that in their territory many of the farms were too large already. Needless to state, this point of view comes out of sections of the country where many farms could be cut in two and still the farm

families would have incomes twice those obtained from Tennessee southward; and where the "economic unit" is being interpreted by some of the professors of farm management to be a farm that employs at least one hired man in addition to the average amount of family labor.

Farms can, in effect, be enlarged without closing out other farms, merely by improving the land now in the farms. The productivity of many farms in this country could be increased a fourth or more by one or more of the following methods: draining wet portions of the farms, developing small-scale pump and other irrigation, pasture and range improvement, land clearing, terracing and other forms of erosion control, construction of needed farm buildings, and lastly, and probably most important of all, taking the country as a whole, woodland improvement. These are often excellent alternatives to buying more land.

Surely, you may say, no new credit facilities are needed for loans for such purposes. What better credit instrument could serve such a need than a real estate mortgage? Dr. Butz answers the last question very well. "At present nearly all types of lenders are hesitant to reopen a mortgage and extend additional credit for such obviously desirable improvements as drainage, liming, new buildings, fencing, and the like." Hence only complete refinancing of the mortgage is possible, and this is "costly and troublesome." Dr. Butz therefore makes two proposals, namely, that arrangements be developed that will allow qualified borrowers to receive additional advances from the mortgagees, and that improvements of this sort be accepted in lieu of amortization payments. The way to get these procedures into general use will be for Congress to amend the Farm Credit Act to authorize these arrangements, and for the banks and insurance companies to adopt them as soon afterward as they will.

Even with this flexibility added, the agencies now granting mortgage credit would not take care of possibly a million of farms needing improvements but which are too small or too heavily encumbered to furnish a basis for a bankable loan. By no means, of course, are all of the farmers on these possible million farms the sort who can really be helped by an improvement loan. However, a few hundred thousand of them could use such a loan to advantage in the first few years after the war, and more later. Such loans should be made only on the basis of carefully worked out farm

plans. Only a few country banks are now helping farmers make such plans. Most of the loans made for such purposes to this group of farmers in the last eight years have been made by the Farm Security Administration as five-year "standard rehabilitation loans." They have not been well enough selected or serviced, partly because those making the farm plan and the loans have not been adequately trained for it.

The improvement loans financed by real estate mortgages and those financed by the Farm Security Administration have also differed somewhat in size and purpose. The FSA loans are more nearly of the "intermediate credit" type, and will be discussed under that head later.

### *Credit for Improvement of Small Woodlands*

Neither the usual type of real estate mortgage nor the FSA standard loan meets the needs for most woodland improvement because of the long period that must elapse before the timber harvest furnishes an income out of which to repay the loans. A further circumstance is that in many situations, such improvements will not return enough to warrant private investment at ordinary rates of interest. The public, however, has a great stake in having these woodlands improved, first because of the prospect of an inadequate timber supply for the nation over the next fifty to one hundred years; second, because of the contribution of woodlands to keeping up the supply of ground-water and feeding the streams; and third, because of the need for control of the siltation of rivers and of dams, and checking erosion generally.

Farm woodlands comprise about twenty percent of the total forest lands of this country. Most of these woodlands are now given very little care and are not very productive. Improved practices in management of farm woodlands, including improvement cuttings, thinning, pruning, reduction of fire hazards and diseases, new plantings, and other approved practices, will in time make these woodlands highly productive.

If these improvements are to be made, however, many of the small forest owners will need technical advice on woodland management. The federal government should take steps to provide this technical advice and guidance in areas where forest lands are important. Then it should provide special types of loans suited to this type of investment. They should be available to farm woodland

owners, and probably to owners of other tracts of forest lands not exceeding perhaps 640 acres. The owner should be required to agree to a program of forestry practices which he has worked out in cooperation with a competent forester. Cash should be advanced on these loans under installments arranged in advance. The owner will in a majority of cases do most of his own work. Farmers commonly have labor available to do this work. In the past, however, since woodland improvements do not ordinarily yield any income until after a long period of years, small farmers owning forest land have commonly sought employment outside the farm. They needed current income for a living. The amount of the installment advanced can be determined on the basis of the number of days of labor allowed in the agreement for each improvement operation, times the agreed-upon wage rate.

Loans for such woodland improvement obviously need to be long-term loans. However, they should have sufficient flexibility to allow the period of the loan to be adapted to the circumstances of each particular case. Repayments on the loan should be based upon the income from the woodland over a period of years not to exceed 30 years after the tract begins to yield a regular income. Since selective cutting and sustained yields are contemplated under the plan, the repayments should extend ordinarily over a period of years. When an owner has a good stand of timber which requires only small expenditures, and it is near a stage when cutting can begin, the loan can be of comparatively early maturity, perhaps 5 to 10 years. On the other hand, development of timber on badly depleted forest land requiring planting would necessitate loans for a term of 30 to 50 years or perhaps even longer. Security for the land should be a first mortgage in the land including the timber. The maximum total loan should not exceed an amount which can reasonably be expected to be repaid out of 50 per cent of the gross income from the woodland over a period not to exceed 30 years.

Loans for forest improvement and development involve many hazards which make the risk comparatively great. These hazards include possible damage by fire, pests and diseases—many of which are beyond the control of the borrower. These high risks, and the long period of the loans, mean that credit for forestry improvement is not likely to appeal to private investors or institutions, and therefore if it is to be made available must be provided by the government. Furthermore, since earnings from the forests are uncer-

tain, the owners will demand low rates of interest if they are to use credit as a means of improving forest lands. Loans, in other words, must be provided at low subsidized rates of interest. Such subsidy can be justified by the public benefits which will accrue from the improvement and development of our forests. A rate as low as one or two percent may be necessary if widespread use is to be expected of credit for rehabilitation of the forests of small owners.

Consideration might well be given in this connection to establishing the Federal Farm Mortgage Corporation as a permanent agency and expanding its authority to include the making of long-term loans for the improvement of small forest tracts at low rates of interest. If this were done, close collaboration between the Federal Farm Mortgage Corporation and the United States Forest Service should be required. Also consideration should be given to broadening the authority of the Secretary of Agriculture under the Bankhead-Jones Farm Tenant Act to include farm development loans which in turn would provide credit for the development and improvement of forest tracts which are parts of farms.

### *Farm Buildings*

Space can be taken only to mention the difficult problem of financing the farm building program which this country will face after the war. This program must include both dwellings and farm buildings. With respect to the former, a decision needs to be made as to whether the credit will be provided through an over-all national housing agency, or as a form of agricultural credit. Arguments can be advanced for both, but the case against trying to set up two types of real estate loans, made by two separate agencies, to be repaid out of a common source of income, the farm business, seems overwhelming. If such credit is to be handled as farm real estate credit, however, the public administrators of such credit will need to do some revolutionary thinking and planning.

A principal reason for the present state of the buildings on farms is that farm incomes were not generally sufficient from 1920 to 1941 to repay the higher cost of building construction after the last war caused by the doubling of wages of construction labor and sharp increase in prices of building materials. Surveys of factors determining the value of farms made around 1920-22 commonly showed a dollar's worth of farm buildings, appraised in the usual manner, adding more than a dollar to the value of the farm. Since

1930, similar surveys have shown the opposite. An investment in new farm buildings in 1935-39 in most cases added considerably less to the value of the farm than the cost of the buildings. Eventually the prices of farm products will need to be high enough to cover the cost of at least a minimum set of farm buildings. Whether or not such a level of prices prevails in the next ten years is the crucial factor in farm buildings credit. If such a level does not prevail, farm housing will need to be subsidized by low interest rates and perhaps in other ways, or it will continue to be disgracefully inadequate.

Credit for part-time farming is very well analyzed in Dr. Butz's article. The housing part of it, he points out, is only technically covered by the FHA provision for insured residential loans, and the agricultural operations on these farms are too small to appeal to lending agencies. It may be added that a good part of the 47 acres in the average part-time farm in 1930 was woodland, and that if the woodland in the belts of part-time farms around eastern cities is not improved these belts will continue to be shabby run-down areas.

### *Farm Ownership Loans*

Concerning the Farm Ownership program, formerly called Tenant-Purchase, only a few points need be made. First, all expansion of it, except for veterans, should be held in abeyance till the level of land values after the war can be more safely judged.

Secondly, some further special provision should be made for farm ownership loans to veterans, in the form of a sufficiency of loan funds, and special provision for partly disabled veterans on pensions. Also some arrangement must be devised to save the veteran from obligating himself to repay a mortgage on a farm purchased at inflated values. Assistance in renting a farm with option to buy later when land values have become stabilized, would seem to be the most rational procedure. If Congress will not favor this, it should provide for a reappraisal of the farms ten years after purchase and reducing the mortgage proportionately if land values have declined.<sup>3</sup>

Third, loans under the Bankhead-Jones Act to enlarge farms, and to make certain types of improvements on them subsequent to first purchase, with increased appropriations to cover these, would

make the Farm Ownership program of considerably more service to agriculture.

Fourth, the agricultural economists in the twenty states nearly all consider that too many loans had been made in their states on farms that are smaller than "economic units," and the principal reason which they give for this is the amendment to the Bankhead-Jones Farm Tenant Act which limits the amount paid for a farm to the average price of farms of 30 acres or over in the county or other unit. In order to operate at all in counties where the bulk of the farms are smaller than economic units, the FSA has had to make loans on undersize farms. A very simple revision of the amendment will meet this situation.<sup>4</sup>

#### *"Standard" FSA Loans*

The "standard" five-year loan called a rehabilitation loan, now made by the FSA to a farm family with a low income for the purpose of increasing its earning power, is a social invention of high significance, likely to be widely adopted over the world. No doubt it had antecedent parallels in the experience of some other peoples, but if so, they are not clearly visible. It began to take its present form when some of the outright grants made by the emergency relief agencies to farm families in 1933-35 were converted into loans because the recipients of them expected to get on their feet again presently and did not want charity. In time, the grants and loans were clearly differentiated, and the loans put on a definite schedule of advances and repayments, based upon a definite farm and home program. Many of the loans made in the early years were not based on plans that offered a reasonable chance of paying of the loan. Either the plans did not represent good farm and home management, or too much was expected of planning in itself. The administrators were finding their way by trial and error. The standard loan of today is conceived as an advance of capital, normally for a period of five years, to enable a farm family to carry out a program that is expected to put it in a position to carry on for itself thereafter, on a higher level of productivity and income than before, accompanied by technical aid in laying out and prosecuting the program. The amount of technical aid on the one hand is greater than

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<sup>4</sup> The last appropriation permits 15 percent in excess of this, but includes new buildings and improvements and repairs, not included heretofore. The restriction is therefore tighter than before.

can be paid for out of the usual interest payments, and at the best there would be more failures than commercial banks can afford. A small net cost to government is therefore involved, but the outlay is small compared with that of prevailing government-aid programs. Although loans are made for five years, they should be extendable in some cases—five years is a short period in which to achieve the large gains expected in the case of some families. Although, in general, families should not be given such loans unless five years will do the job, more time should be allowed some families, especially when the program planned proves not to have been made right. The advances at the start can properly be of two kinds, those to buy equipment and livestock needed, and annual operating advances of the sort that many farmers regularly obtain from banks, or in the South, from landlords. The second type will need to be renewed from year to year, until no longer needed, or obtainable at local banks or from Production Credit Associations.

The writer has refrained from applying the term "rehabilitation" to these loans, except to identify them, because most of the families receiving them *cannot be rehabilitated because they never were habilitated*. He proposes, therefore, that they be called *habilitation* loans. It is true that in the period when this type of loan was evolving, a considerable fraction of the families aided were in difficulties mainly because of the depression or because of droughts in the West. And no doubt there will be families needing help for similar reasons again. But the preponderance of cases will be of the habilitation type until such time as most of the families of this description have been reached by this means, or by farm enlargement loans, or by improvement loans of the several types described above.

The two needs of the habilitation loan program at present, in addition to giving it a clear status, and a continuance of the sound constructive over-all administration it has had recently, are better trained personnel to help with laying out the farm and home programs, and decentralization of the administration by giving local committees a large measure of responsibility for selecting the families, approving the farm and home programs, approving the annual advances, and deciding upon extensions of the loans. These local committees should be given much latitude in decisions on these points.

#### *Sub-standard Farm Families*

What about farm families with too low productivity to be in-



cluded in the standard loan programs? The FSA has sorted out a few hundred thousand of these from its lists, quit making them loans, classifying them as "collection only" cases—as many as a thousand of these in a few counties. The writer agrees with Dr. Butz that the problems of these families mainly need other kinds of treatment than habilitation loans, but he does not say that such loans cannot be used to advantage with some of these families, *along with other measures*. They should not, however, be handled by the kinds of agricultural credit institutions which we have been considering. Instead, the states need to enlarge their public welfare services to include help for these farm families and to equip their public welfare agencies with personnel competent to assist such families in planning what farming they do, and in budgeting the living expenses, as well as with the medical problems frequently involved. In those cases in which loans to buy equipment or livestock or annual advances and the like are indicated, the device of the joint bank account can be very useful. Public welfare work with farm families conducted in this way can accomplish much more for them than public welfare work commonly does for city families.

### *Farm Real Estate Credit*

Two questions relating to ordinary farm mortgage credit need to be considered before concluding this article. One is the extent of the servicing which the FCA and its loan associations can advantageously give its borrowers. The answer given here is that a farm production plan should be required along with the application for the loan, and the applicant should have some technical assistance in working out this plan.

The second question is the use of variable-payment provisions. It is true, as Dr. Butz states, that borrowers like variable payments better in years of low income than of high income, and that many of them prefer a fixed schedule of payments. But this does not mean that the FCA should not push vigorously toward a general use of such payments. The proposals here suggested are: (1) Devise a genuine variable-payment schedule, in place of the makeshift one now made necessary by the language of the Farm Credit Act. (2) Make this optional with all borrowers in which the mortgage does not exceed the limit of 50 percent of the appraised value of the land plus 20 percent of the value of the improvements. (3) *Require* the variable-payment plan with all loans in excess of this limit. (4)

Develop a scheme by which payments made during the war in excess of the fixed schedule can be used as offsets to deficiencies that may occur in future depressions or disasters. (5) Amend existing statutes to authorize these proposals.

Ordinarily, mortgages to enable farmers to buy farms should be made on an amortization basis and include variable-payment provisions. It should not be necessary from any point of view for farmers to commit themselves to a contract calling for payments which they cannot make in years of crop failure or agricultural depression. On the other hand, it is desirable that they make larger payments than usual in years of very good income like those since 1941. Neither should farmers commit themselves to paying off a mortgage at a more rapid rate than can ordinarily be expected after allowing a reasonable margin of safety. They should, however, be permitted to pay off their mortgages as fast as they are able. One can understand why a private individual loaning money on a mortgage may not want to have his payments coming to him in this variable fashion. But no commercial or public credit agency can offer a really substantial argument against it. The public lending agencies need to take the lead in this development.

The changes suggested need to be made soon. We must be prepared for a possible break in farm incomes and land values anywhere from three to ten years after the war. If the mortgages written during the next two years are set up on a variable-payment basis, the farmers will make some good payments during the next few years and then be able to carry on during the depression years that may follow.

### *Intermediate Credit*

Equally important is it that loans of the intermediate type, for a term of one to three years ordinarily, for the purpose of buying cattle and farm machinery and making minor building and land improvements and the like, be put on a sound basis before the next depression. Most of the intermediate term loans now being made are made as short-term loans with expectation of renewal, or as real estate mortgages. By the end of 1920 after the last war, the banks of the country had \$3,900,000,000 of short-term loans outstanding against agriculture as contrasted with \$1,600,000,000 in 1914. Over half of this increase was written in the last two of these years. Part of it was in the form of loans to grow annual crops, but

an almost equal fraction of it was for investment in working capital and buildings of the sort named. When the crash in farm prices and land values came in July 1920, the banks tried to call these loans, or refused to renew them. This, on the one hand, forced large numbers of farmers to sell their working capital in order to pay off their debts, and on the other, caused thousands of banks to fail because of holding frozen assets. Out of 177 banks which failed in the state of Minnesota between 1920 and 1926, the bank examiner gave frozen assets or some similar explanation for the failure of 148 of them. Much of this debt was presently refinanced by adding it to mortgages. The volume of farm mortgage debt in the United States rose from 8 billion to nearly 11 billion dollars between 1920 and 1923, in spite of sharply declining land values.

We could have a similar situation some time after this war. Agriculture is in an unusually solvent position right now, and farmers have large reserves of cash or bonds. But most of the difficulties after the last war were caused by developments in the two years after the war ended. We are by no means safe against a repetition of a considerable part of what happened in 1918-20.

This country was very keenly aware of this shortcoming in agricultural credit in the early 1920's. A committee of Congress held hearings all over the country on the McFadden Bill and other proposals intended to provide this kind of credit. In 1923 Congress passed the Federal Intermediate Credit Act which provided for the establishment of 12 Federal Intermediate Credit Banks, which were authorized to discount paper for agricultural credit corporations and other types of private lending agency. But not very many such corporations were established. The Northwest had more than any other region, but only around a hundred were set up in the St. Paul bank district. In spite of their disastrous experience in the early 1920's the farmers kept on making working capital loans as if they were loans for annual operating expenses. They ran into another jam in 1930-31, but this time the intermediate loans played a smaller part in the catastrophe than the real estate mortgages based on receding land values.

The production credit associations provided for in 1933 were expected to provide loans of this sort. Except in two or three of the districts, they are being made on a very limited basis. The associations instead are making such loans on a short-term basis the same as the commercial banks, the farmer committing himself to

pay in one year what he cannot expect to pay in less than two or three. Of course, renewal of the loans is possible, and the farmer has a right to assume that the Farm Credit Administration will not have to close down because of frozen assets, as private banks may have to do if they have made too many loans of this sort in the two or three years before the next big depression. But even though this is a reasonable assumption, the farmer should not be required to commit himself to an unreasonable program of repayments. Congress would therefore do well, in its revision of present provisions for agricultural credit, definitely to instruct the Farm Credit Administration to make bona fide intermediate-term loans.

As things have worked out, the agency which has really developed intermediate-term credit for farmers is the Farm Security Administration. Most of its standard rehabilitation loans provide intermediate credit to buy livestock and other working capital, to be repaid within a period of five years according to a schedule of annual payments that is carefully defined. These loans, however, are supposed to be made only to "low-income" farmers and most of them are for less than \$1,000. The Farm Security Administration is not supposed to make loans to farmers who have larger resources and who can borrow at commercial banks. In consequence, these farmers, if they borrow at all, go to the commercial banks and make such loans as if they were annual operating loans and take a chance on their being renewed in case adversity strikes.

The commercial banks have risen to this opportunity very encouragingly in the last five years. Probably a few hundred of them are now making intermediate-term loans under a system of payments running over two or three years. One of the reasons for this is that the banks are now looking hard for opportunities to loan money, and they have begun to encourage their farmer patrons to invest in working capital and real estate improvements. But it is not safe to count on this development to meet the needs of the situation as it is likely to arise within the next five years.

### *Cooperative Credit*

Finally, a word or two about cooperative credit. Here again it is important to emphasize that no new agencies of any kind are required to provide the credit that cooperatives will need. However, the facilities of the Farm Credit Administration have not in the past covered the field adequately. Principally, they have not pro-

vided the necessary services and financing for cooperative buying of farm machinery, purebred sires, and the like. Either the Farm Credit Administration must branch out in this field or else the Farm Security Administration must render this service. The legislation on this subject should be specific.

There is also question as to whether cooperative loans should not be for a considerably larger fraction of the investment in farm machinery and the like than is now possible under the rules under which the cooperative banks make loans to cooperatives. If individual farmers are able to obtain loans at banks for a large part or all of the cost of farm machinery, why should not farmers buying collectively be able to do the same thing?

Credit can also be used to advantage in helping to try out and develop new forms of cooperative enterprise. An example of this is credit to establish woodland cooperatives. The small woodland owners may not be able to advance the capital necessary to set up a cooperative enterprise in this field. It might be worth while therefore to make available a small revolving fund to be used by the cooperative branch of the Farm Credit Administration in setting up "pilot" cooperatives, these to be financed in the regular way as soon as they establish their ability to stand on their own feet.

#### *Organization for the Servicing of Loans*

A major problem still to be solved is the organization and setup for servicing, in the manner outlined above, the several types of loans that have been analyzed. It is here dealt with summarily by the submission of a definite proposal. This is that there be created in each county an agricultural credit committee of five or seven members that will undertake to *secure the best possible use of credit in its county*. This committee will have the services of persons competent to make farm production and improvement plans, home plans if needed, woodland development plans, drainage and irrigation plans, building plans, and the like, that are to be offered as a basis for loans, these persons to be on the payrolls of the agricultural extension services, but specifically assigned to do this work. These same persons will visit the borrowers when needed and offer suggestions as to the carrying out of these plans. In a majority of cases, these persons will devote their full time to this work. The committee will review the plans which they bring in, suggest revisions if needed, and *decide what agency can handle each loan to best*

*advantage*, choosing between the private lending agencies operating in this county, the farm loan associations, the production credit associations, FSA farm-ownership, FSA standard loan, emergency crop and feed loan, water facilities, etc.

The general policies which the committees will follow will be determined by the consolidated national central governing body. One of these policies will be to let a private agency handle a loan if it wishes to do so *under the loan terms which the committee specifies*.

This committee will absorb the committees now helping write farm-ownership loans and standard loans. It will be the local committee described above as needed to handle standard loans properly. Its membership should include several farm operators, who in the main are members, but not officers, of farm organizations, one person with considerable banking experience, preferably not a banker at present, and other highly regarded citizens of the county not now holding public office. It may create sub-committees to help it in distant parts of the counties. Its ex-officio secretary will be the county agent, or preferably an assistant county agent employed for this purpose.

The agricultural extension service will be responsible for the technical competence of the plans prepared, and of the guidance furnished in carrying them out, but not for any recommendations concerning the granting or handling of loans. The committee will not be responsible in any way for the security of the loans accepted by any lending agency, but will keep fully informed as to the repayments on all the loans it has recommended.

It is assumed that the state extension service will need financial assistance in furnishing these technical services to the committees. Most of the timbered counties will need a full-time forester working on farm woodland plans. The expenses of the committees as such will be shared between the agencies served by them, including even the private agencies on some equitable basis.

The actual details of operation of such an organization could be hammered out in conferences, tried out in the counties, and revised as need be until a reasonable degree of smoothness, regularity and harmony is attained.

#### *Credit for Postwar Reconversion*

The readjustments which are going to be called for in the agriculture of this country at the end of the war and in the next ten

years, on the one hand, place a special burden upon the credit agencies serving agriculture, and on the other, afford them an opportunity for unusual service. If they are adequately staffed and supplied with the loan funds needed for it, they can play a very large role in promoting the desired types of readjustments. In many situations, credit and subsidies are alternatives. Given credit and assistance in planning the use of credit, a large fraction of the reconversions that are going to be called for in the next decade can be brought about without any direct subsidies or financial inducements to farmers to make them. Technical aids in planning readjustments combined with credit make a very effective combination.

## THE AGRICULTURAL ECONOMICS PROGRAM OF CHINA

PAO-CHUAN CHAO

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THIS paper<sup>1</sup> is a brief description of the principal lines of work now being carried out in the Department of Rural Economy, the Ministry of Agriculture and Forestry, Chungking, China. The scope of work assigned by the National Legislative body to the Department of Rural Economy, the Ministry of Agriculture and Forestry, is rather broad. It includes: (1) the reform of land tenure, (2) the planning and supervision of agricultural credit, (3) the improvement of farm management, (4) survey and research in rural economy, and (5) other rural welfare affairs. These provisions indicate that the nature of work of the Department is both administrative and research, both action and fact-finding.

In recent years, however, we have paid more attention to the third and fourth categories of work as listed above; that is, the improvement of farm management and the survey and research in rural economy. We believe that unless the organization and the operation of the farm are materially improved, the welfare of the farmer can hardly be promoted, and that before we can formulate any definite policy and put it into effect, we have to find out facts. In the following, therefore, I shall say a few more words about farm management and agricultural survey and research although other phases of work will also be touched upon.

I. *Reform of Land Tenure.* The purpose of the reform of land tenure is twofold. The first is to protect the tenant farmers and to raise their economic standing. The second is to help and to build up owner farmers so as to attain eventually the objective that those who cultivate the land are also owners of the land and to wipe out the boundary now existing between the landlords and the tenants. The methods of approach in this connection may be described briefly as follows:

(A) *Protecting the tenant*—In accordance with the Land Law adopted more than ten years ago, the Ministry of Agriculture and Forestry has instructed the various provinces to reduce land rent, specifying that the rent should not exceed 37.5 percent of the total

<sup>1</sup> Remarks to the seminar in Advanced Agricultural Economics, University of Wisconsin, February 28, 1945. Mr. Pao-chuan Chao is the Director of the Department of Rural Economy, in the Chinese Ministry of Agriculture and Forestry.



value of the principal product of the land. At the same time, the landlords are prohibited from changing the tenant without sufficient reason and from collecting rent deposit. This measure is being enforced in different parts of the country by first making surveys and by publicity, then conducting experiments and demonstrations, and finally putting the findings into effect. As conditions vary in different provinces, modifications have to be made in order to fulfill local requirements.

(B) Helping and building up the owner farmer—This is jointly sponsored by the Ministry of Agriculture and Forestry and the Land Administration and is being carried out by resorting to administrative, technical and financial efforts. Several districts have been selected for experimentation. The land in the district owned by the landlord is transferred to the tenant or to those who have not enough acreage for profitable cultivation. At the same time, scattered patches of each farm are consolidated. In case the farmers are financially unable to buy the farm, they can secure long-term credit from the Farmer's Bank of China, usually through the recommendation of the agricultural field workers.

II. *Planning and Supervision of Agricultural Credit.* While the actual operation of agricultural credit is largely handled by the Farmers' Bank of China, the Ministry of Agriculture and Forestry has the authority or obligation to plan and to supervise the operation. For the sake of coordination and cooperation different devices have been used: (1) the exchange of information and materials whenever available; (2) to plan together before the beginning of each fiscal year; (3) to hold monthly meetings for discussion; (4) to make joint investigations if necessary in different localities.

Besides, the Ministry is kept informed by its field workers of the farmers' needs for and their attitude toward agricultural credit, so that necessary adjustments may be made from time to time.

III. *Improvement of Farm Management.* Through forty centuries of farming practices, Chinese farmers have gained a great deal of experience and have developed certain kinds of technique in farming which are acknowledged as excellent by the whole world. Among them, the maintenance of soil fertility, the check on soil erosion and the establishment of the irrigation system are frequently mentioned. But the fact that there have been some achievements in the past does not mean there is no room for further improvement in the future. On the contrary, the introduction of

more scientific methods of cultivation, improved varieties of crop seeds and breeding stocks, more efficient use of productive elements and better combination of enterprises will help Chinese farmers increase their production and thus their income. The farm management project carried on by the Ministry is endeavoring to attain this goal.

With an average size of about four acres of cultivated land, the Chinese farm cannot be operated efficiently. The future development of industry and commerce may absorb a portion of farm population and thus may help farmers enlarge the size of operating unit, but it will be a slow process. At present, the conscription of military forces has caused a shortage of farm labor. Therefore, it seems to be the proper time now to organize the cooperative farm so that constituent members will be able to use jointly some kind of labor-saving machinery on the one hand and to exchange work among members on the other. Beginning from 1941, ten cooperative farms have been organized in four localities. Each farm has about 100 participating farmers. Its work includes production, processing, purchasing and marketing. From the experience of more than three years we have found that the work is much more effective in regions where special agricultural products are produced. For instance, in the cotton region in Szechwan, a cooperative farm was organized by 105 farmers with the help of the field worker sent by the Ministry. Labor-saving farm implements were gradually introduced. An improved cultivator operated by one man accomplished as much work as could be done by six men with ordinary tools. Efficiency of a man with an improved seeder is about five times higher than that of the one with a primitive seeder. Formerly, these farmers sold their cotton to the local dealers without ginning. They got relatively low prices. The labor being saved now and the cooperative operating facilities make it possible for them to gin the cotton themselves and to ship it cooperatively a longer distance for better prices. The farmers in the vicinity were so impressed that six more cooperative farms have been organized.

In advising farmers to improve their farm management individually, the Ministry of Agriculture and Forestry chose 19 counties as experiment and demonstration areas in 1941. Unfortunately the operation of the War has reduced the number to four counties. Within each of the selected counties, farm management associations have been organized, the individual farm or-

ganization and operation have been analyzed, strong and weak points have been found out, and possible improvements have been made. It is interesting to note that farmers of the association are also gradually using cooperative methods in daily operations.

In the areas where either cooperative farms or farm management associations have been organized, agricultural commodity prices are surveyed, agricultural loans are extended, better seeds, stocks and methods of culture are introduced, and improvements in farmers' homes are made.

IV. *Survey and Research in Rural Economics.* Under this heading, the following phases may be cited:

1. Crop report. Crop report is considered as a type of agricultural survey in the broad sense. It was started in 1934 by the National Agricultural Research Bureau. Since the establishment of the Ministry of Agriculture and Forestry, the work has been put under the direction and supervision of the Department of Rural Economy. Before the war the crop reporters numbered more than six thousand, scattered over 22 provinces. The number has been reduced now to about 3,500, in more than 900 counties of 15 provinces. The report includes such materials as acreage and production estimates of the most important winter and summer crops, estimates of livestock, consumption of food, distribution of farm tenancy, rural industry, estimates of fallowed land and special products, statistics of land value and land tax, price index of agricultural commodities and index of purchasing power of the farmer.

2. Survey of the agricultural conditions of the Northwestern provinces. For the further development of that area and the preparation for the settlement of a part of the ex-service men, the Ministry of Agriculture and Forestry sent in 1944 three groups each with about twenty agricultural technicians to gather information on the following items: (1) population engaged in agriculture, (2) land, (3) climate, (4) farm crops, (5) forest, (6) livestock, (7) irrigation projects, (8) reclamation, (9) rural economy, and (10) organizations engaged in agricultural work.

3. Study of cost of rice and cotton production. This work was undertaken to facilitate the price control in China. Surveys were made in 1941 in various rice and cotton regions. In each region about 50 to 100 records were taken as representative samples. Several agricultural colleges cooperated with the Ministry of

Agriculture and Forestry in the field work and the primary analysis.

4. Research in farm management. Farm records taken by the Farm Management Associations mentioned above are sent to the Ministry for analysis. On the basis of the result of the study, individual farmers are informed by the field worker of the ministry of what has happened on their own farms as compared with that of others. Comparison is also made from year to year to show the historical development of the farm business. Although such examples can hardly be free from bias, the study still serves to improve farm management.

5. Study of marketing of rice, wheat and cotton. For these staple farm products, marketing centers have been relatively well developed in China. It has been the aim of the Ministry to find out the volume of business, the seasonal variations, the price spreads, the channels of shipment, the means of transportation, and the cost of transportation and handling. Dealers engaged in the business furnish necessary information; the local agricultural agencies also cooperate with the Ministry.

V. *Other Rural Welfare Undertakings.* For these works, the Ministry, together with its field workers, is primarily in a position of promotion rather than direct undertaking. We suggest the needs of certain undertakings, for example, to repair or to build up country roads, to establish rural schools, etc. in certain areas, and try to interest the rural community and the governmental institutions concerned and sometime to help the people organize. Whenever the project is started, the rural people usually contribute labor, and the governmental agency concerned contributes techniques and material.

## A PUBLIC FARM LAND APPRAISAL SERVICE ITS DESIRABILITY AND PRACTICABILITY\*

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WHEREVER land is held as private property, the general public, the state, the community, the owner, the operator, the creditor and many other interested parties, attribute to it a "value." When title to such land is transferred under free sale, when an estate is settled, in the course of foreclosure proceedings, when the courts adjudicate tax-delinquent property to the state, or when the courts condemn it under eminent domain, or whenever such property is encumbered, pawned, or deeded in trust, a "value" is determined or expressed in terms of a specific sum of money. When property is sold, the parties to the sale arrive at a compromise between their divergent concepts of the value, meaning the ratio of exchange in the market, and express it in terms of the sales price.

In any private enterprise economy, the value of land represents a considered opinion about the comparative usefulness of the specific tract in view of the supply of such land, its peculiar qualities, and the demand for it. The value of land is therefore one of the most powerful devices guiding and regulating the flow of investment into improvements of and on land, the settlement and development of rural areas, and the intensity of land use.

The value of the land constantly reflects, moreover, an estimate of the present and future business situation in agriculture and other forms of land use. A sharp, rapid decline in land values leads almost always to a serious crisis in farm credit. Hectic rises in land values lead to speculative investments, increased indebtedness, faulty estimates of the sustained economic yield of the farm enterprise, and a subsequent decline in values.

Thus the determination of the value of land, as a measure of its usefulness, is a matter of great private and public concern. In a mature capitalistic economy one might expect, therefore, that the theory, the methodology, the technique, and the institutional organization of farm appraisal would have reached such a high level of perfection that now only subtle refinements need be contemplated.

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\* Abstract of a discussion presented by the author before a meeting of the National Agricultural Credit Committee in Chicago, Illinois, January 22, 1945.

But the real situation is far different. The theory of land appraisal is under discussion among a very few experts; no book about it has yet been published in English. Methodology is being developed empirically by private and public lending agencies. Only four or five of the land grant colleges offer courses in farm appraisal; and these have done so only for a few years. Appraisal techniques, similarly, advance by trial and error, but also through the systematic research conducted by the colleges of agriculture, the U. S. Department of Agriculture, private and public lending agencies, and private appraisal services.

This lag in the development of farm land appraisal has come about because the problem is complex. Moreover, it has been a difficult one to solve, from the practical standpoint, in a country whose population is so mobile, where conditions vary so widely over the Continent, and where agriculture's development has taken place with such breathtaking speed.

Although the situation with reference to the large and important field of farm land appraisal is still very unsatisfactory, substantial and solid progress has been made in the United States during the past 30 years. This progress is so impressive that it deserves careful study and consideration, for within it lies the key to further progress by means of the proper public policies.

Before reviewing the nature and scope of the accomplishments in farm appraisal, it seems advisable to define and illustrate first what is involved in agricultural land valuation and what, according to up to date standards, a farm appraisal ought to be. A most unfortunate ambiguity of concepts concerning land valuation exists, and there is no commonly accepted standard terminology. So great a variety of procedures is being followed that definition and illustration are mandatory.

The appraisal of any land to be used for agricultural purposes (including arable farming, horticulture, shrub and tree crops, forestry, grazing, part-time farming) involves the accomplishment of the following tasks:

Facts and data concerning the tract's physical assets for agricultural production, and its ability to provide a livelihood for those who live on and cultivate the property must be assembled. The appraiser in every case must verify or determine the data by carefully inspecting the site under circumstances which do not interfere with this work. Prominent among the data the inspection must

test is the physical yielding capacity of the land, taking into account the climate, topography, and soil conditions. The investigator, to do an accurate job, must have solid background and experience in farm management, special training in comparative soil rating, and familiarity with the particular region and its farming conditions. Continuity in this sort of professional activity is also mandatory. Without it the capacity of judgment fades.

Next, the appraiser must determine the lay of the land, shape of tracts, the internal and external communications (i.e., roads, highways, truck, rail, river, or canal transport facilities), the economic location with respect to nearby and distant markets, and the costs involved in buying farm needs and in selling produce. To discharge this part of his job, the appraiser must have, besides familiarity with farm management, much broader applied economic knowledge with particular reference to agricultural economics.

Among the other physical assets for agricultural production, the existing improvements on the land must be listed and inspected, such as buildings, fences, wells, dykes, ditches, pavements, tracks, loading ramps, stationary machinery, and other forms of long-term investment. For all of these a value has to be determined which shall reflect either the contribution these improvements promise to make to the commercial operation of the farm, or the sales- or scrap-price of each improvement. The appraiser collecting these data must have the knowledge of a competent farm manager and some special training in appraising various types of durable improvements.

A similar check-up should be made of all other inventories, live as well as dead ones, including actual commodity stores, as well as those that would be normal on the property under the most suitable type of operation.

Once all these data have been fixed, the property in question must be analyzed as to the opportunity it gives the owner to invest capital prudently over a longer period and to apply management and labor to it. The appraiser must evaluate the property's ability to give its owner a financial return from the joint application of all production factors, and its operator some satisfaction by way of accommodations and amenities for living. The property must be compared with the other property in the same region and the appraiser must carefully weigh special advantages against serious

defects and drawbacks. Farm appraisal requires in all cases travel, thorough and efficient inspection, familiarity with a certain area, and a great deal of experience in accumulating an "inventory" of knowledge on farm real estate, and the market for such real estate.

The rank such property holds with respect to competitive tracts of land will first of all be made as of the day of appraisal. This *pro tempore* appraisal is not sufficient. The appraiser must go beyond the accurately ascertainable facts and form a well-considered opinion on the place the property will probably occupy 10, 20, 30 or 40 years from the day of the appraisal. This projection of an investigated property into the future is an intricate and hazardous procedure. It involves a forecast of future changes within the "topography of land values." This undertaking demands constant observation of economic, social, and political trends, of shifts and changes, regional and local dislocations, trends in the prices of commodities, in the business cycle, and in the volume of domestic and foreign trade. All these observations are the special domain of the economic analyst.

Yet there is another partly technological side to the projection of the particular farm into the economic future. Farm technology is making energetic strides in many fields and its impact is in the longer run felt in the comparative advantage of certain climates, soils, locations, types of farms and farm people. For example, the immense increase in the domestic production of nitrogenous fertilizer, the downward trend of nitrogen prices, and the availability of phosphate fertilizer gives an increasing comparative advantage to moist sandy soils, particularly in climates with a long growing season for truck crops. New varieties of fodder plants tend to expand the fodder basis for meat and dairy cattle in the southern regions, while at the same time new processes of treating slash pine for paper pulp production have enhanced the profitability of a new type of forestry. Hybrid corn has improved the yield of corn and thus added to the profitability of land most suitable to corn production. New varieties of small grains will change their yield records, too. Powerful new insecticides and fungicides developed during the war will benefit farming in those humid and hot areas where lush plant growth now is jeopardized most by fungi and insects. Power-driven machinery to cultivate and pick cotton will lower cotton production costs on land most suitable to mechanized operation. The pick-up hay-bailer and special bale lifting and



loading equipment for trucks will cut the labor requirements on cattle ranches substantially.

These examples stress the fact that to be competent, farm land appraisal must not only anticipate the contingencies of the economic future in general, but must take into consideration major developments in farm technology and weigh carefully the extent to which such progress will become economically effective.

General economic policies cannot fail to have their impact upon the conditions which determine the economic opportunities for farmers. The more abundant the supply of capital becomes, and the lower the interest rates on long-term loans, the higher land values will be for the type of property paying the highest dividends on long-term capital investment. Great changes in the services and rates of transportation (water, rail, truck, bus, and air) similarly affect farming and rural living conditions, and this eventually will be reflected in land values. The regional or local rise or decline of industries may boost or deflate land values. Public investment policies fall into the same category. The glacial shift from property and corporation taxes toward high income taxes for all employed people must in the long run also have some differential effect upon land values.

The answer to the demand by the clients of the appraiser that he should forecast cannot be sought in the attempt to approach perfection in the art of lifting the veil from the future. On the contrary, it must lie in the most accurate and elaborate explanation of specific assumptions about the economic future upon which the appraiser has based his calculation of the different values he determined for a piece of property. This record of the underlying assumptions about the fluctuations of the main prices and other factors will permit those who want to use the appraisal document in later years to apply certain corrections without necessarily having the whole property re-appraised.

The valuation of agricultural land is as much an art and a skilled craft as is the appraisal of the health, the mental and physical ability, and the prognosis of the life expectancy of applicants for life insurance by the life insurance company physicians. Besides the entire resources of modern medical and all auxiliary sciences, those physicians practice the great art of using their own judgment in prognosticating into an unfathomable future, assisted by their own accumulated experience in that regard. Farm land appraisal

has many similarities. Today it requires much more than solid knowledge of local or regional farming, and it has to deliver a great deal more than a lump sum in dollars representing the final judgment of the appraiser, arrived at by some mysterious and highly secret method not even shared among the initiated members of the trade.

An up-to-date appraisal, worthy of the name, is a document containing all pertinent information about the appraised property in a well arranged standard form, as well as the results of the inspection and the judgment of the appraiser concerning the chief factors responsible for classification and valuation. This information must reveal in detail the process by which the appraiser formed his opinion and thus permit review and correction as basic data change. The appraisal must include several specific values, such as the market price, the sustained or "normal" value based on certain assumed minimum and maximum price levels for products grown or suitable to the land, a distressed sale or foreclosure value. In any case, the terms of value need to be defined clearly and elaborately on the appraisal form, so as to eliminate misrepresentations. The appraisal can always be no more than a considered opinion as of the day it was written. This fact must also be clearly stated in order to enable those who work with the document later to apply corrections. The appraisal may at any time also comprise answers to specific questions asked of the appraiser concerning specific qualities of the property. At the same time no appraisal can ever involve a responsibility for the risk incurred in actions or transactions by other parties who use it. Wherever possible, the aerial survey should be attached, because it permits measurement with remarkable precision the acreage of the tract as well as of certain parts thereof. Where important improvements exist camera snapshots offer better and more durable evidence than do descriptions and measurements alone.

It derives therefore that conscientious and competent appraisers need more than a good and well trained mind, a strong and healthy physique and a keen pair of eyes and ears. They need also the assistance of a variety of experts specializing in rendering such service to farm appraisers. This aid must cover many fields and must be adjusted to specific regional conditions, including tax rates and public utilities. It must conduct continuous observation and research in order to do a good job. In California and neighbor-

ing states, for example, such a service would have to provide water engineers to check changing ground water tables and the resulting risk to farming, keep track of all irrigation developments, water costs, precipitation records for small areas, poisonous trace elements in water, changes in riparian and other water laws, bond issues by irrigation districts, etc. The service to the appraiser must consist also of continuous information about and supplies of the many technical aids available for appraisal field work, such as maps and surveys, planimeters, augers, calculation tables for buildings, and price lists for machinery and implements. Still another branch of appraiser service concerns well digested information derived from applied economic research. It must provide information in written form or orally in conference and discussion about markets and prices, farm sale prices, farm profits and losses, delinquencies, foreclosures, and many other developments.

A number of public and private agencies do provide surveys and analytical economic services to some extent. Yet an active appraiser cannot possibly digest the bulk of such widely scattered material, only a little of which is collected and presented for the purpose of giving special service to practicing appraisers in the field.

Exceptionally capable free-lance appraisers presumably might succeed in keeping themselves abreast of all economic drifts. But the sum total of their professional performances could not possibly yield the sorely needed fully satisfactory service to the public. Inevitably each of them would choose his own procedure, shape his own concepts, and make his special assumptions about many factors. A comparison of the appraisals of any two independent appraisers in contiguous territory having almost identical conditions would, in all probability reveal wide discrepancies in the appraised values, especially over a long period. No two appraisers will attach the same importance to economic events covering, for instance, a decade, exactly alike—unless they make continuous efforts to corroborate their information and to tune up their judgment. Values established by different appraisers will therefore vary widely over longer periods. If one covered the map of two areas with all the appraisals made, the values would show a marked boundary and a step from the domain of one appraiser to that of the other. Hence even the very best individual independent appraisals are bound to be incomparable. This fact alone is respon-

sible for an unnecessarily wide latitude or spread of land values, even within one township. The vast number of incompetent and biased quack appraisers exaggerates that margin of error to truly grotesque proportions.

So long as this situation prevails, even the best free-lance appraisals are a defective instrument for any sort of policy requiring a common base of judgment for action. The necessity of coordination in appraisals is well known to all farm mortgage and other agricultural lending institutions. It is one of the chief problems in all tax assessments and is overcome there by boards of equalization. In order to align a multitude of appraisals by many appraisers and make their work comparable, closest coordination in the training and preparation for field work of the appraisers is mandatory. Moreover, there must be recurrent conference among them, use and exchange of the same basic information, and continual competent and critical check and review of test appraisals by those in charge of an appraisal system. In other words, like the management of all good business, the task of coherent and comparable appraising requires the adoption and enforcement of a well considered policy. Such policy of coordination presupposes, of course, that a large staff of appraisers operates over a large territory, and operates under responsible and mature central management.

The pertinent conclusions to be drawn from the foregoing discussion may be summarized as follows:

1. Appraising agricultural land is a special profession that requires much training, skill, experience, continuous practice, and capacity for judgment.

2. To do a competent job, field appraisers need the continuous service of a research agency which will provide them with all the special scientific information they need.

3. While the individual valuation of landed property by free-lance appraisers is not impossible, it is invariably handicapped by resting on too small a sample and too limited experience, and values thus determined cannot be compared as to methods and results.

4. Only a large-scale appraisal service, with high caliber appraisers, a central research and service division, mature reviewing appraisers, and central management establishes the proper framework for a well balanced and reliable system of land valuation.

In the United States there are individuals who make appraisals

for a fee for anyone who wants them; that is to say, they will, inspect a property and say how much they think it is worth in the real estate market at the time of the appraisal. These men are not, by and large, full-time professional appraisers. Appraising in this country is a side line for practicing or retired farmers, for real estate or insurance agents, former tax assessors, and other people. A few gifted and honest individuals among them may be found in many parts of the country, having sufficiently good judgment to make sound appraisals; but even their reports suffer all the aforementioned drawbacks of all individual appraisals. Most of these men work for banks and are thus out of circulation for individual clients. However, for each of these few able men, there are scores of quacks for whose incompetence, bias, if not outright dishonesty, their clients pay dearly, often with all they own. The farm real estate market is strewn with wreckage caused by lump sum horseback guesses by this army of would-be appraisers, whose guesses always ride the crest of the wave of public speculative sentiment. Responsible to nobody, these men do immeasurable harm to public welfare. The fact that their majority have no *mala fides* does not make it any better, the less so since some appraisers are dishonest and set values in the interest of parties other than their clients. While in most of the states every barber needs a license, anybody who wants to can practice appraising farm property without any obligation whatsoever.

That this deplorable state of affairs can persist lies in the fact that most of the customers of the quacks usually need to have farm land appraised but once in their lifetime, or at least only once in the same community. There is, in other words, no association for the protection of the rights of clients of farm land appraisers.

The general public has in most parts of the country no choice but the motley crowd of free-lance appraisers. In the Mississippi and Missouri valleys, however, a few reputable companies specialize in appraising for clients, perform their job well, render real service within their area, and pursue a well considered appraisal policy. These agencies cooperate with private lending agencies and colleges of agriculture.

The most competent and extensive systems of organized valuation of agricultural land by full-time professional appraisers operate outside the reach of the general public. They belong to the large scale institutional farm mortgage lending agencies, foremost

among them the 12 Federal Land Banks, and the large insurance companies. The Federal Land Bank appraisal system is the only one covering the whole area of the United States. While insurance companies and the Federal Land Bank system represent the most advanced techniques of agricultural land valuation today, their appraisals are carefully guarded business secrets. Even their customers do not have access to the appraisal of their own property.

With due respect to the high appraisal standards of some of the leading insurance companies, the research and service resources and the techniques of the Federal Land Bank appraisal service are peerless in the United States. Since the inauguration of the Federal Land Bank system in 1917, an increasing effort has been invested in the development of an adequate appraisal system. During the last 27 years, the U. S. Government has subsidized the Federal Land Bank system, and has thereby contributed with public funds to the accumulation of invaluable experience and knowledge of the appraisal service and the research division for the entire system under the Farm Credit Administration. Nowhere else today is there a comparable wealth of accomplished research work, of carefully kept farm real estate and loan case histories, and of reviewed, time-tested appraisals. The highly trained and seasoned staff of appraisers is considered by private mortgage bankers as the greatest asset of the Federal Land Bank system. Yet the average citizen in need of an honest, competent, appraisal is just as lost as if that institution did not exist. The Federal Land Banks alone have access to and the use of this appraisal system, although it was constructed with great public funds.

This situation definitely calls for a change. Twenty years ago we had no public provision for establishing prima facie evidence for the actual quality of perishable farm produce. A farmer or a cooperative association could send a carload of perfectly healthy potatoes from California to Chicago only to receive a wire that the recipient had refused acceptance because most of the tubers were rotten, the few healthy ones had scab, and the boxcar was full of rocks, pebbles, and dirt. This incident took place usually when heavy carload receipts were glutting the market. Months later in court the most judicial judge could not determine in what condition the potatoes actually had been, because there were neither standards or grades of quality, nor trustworthy public inspectors. But today any farmer may have a sworn public inspector examine his

shipment of perishables for a fee, anywhere in the United States. Millions of dollars and an enormous amount of energy is thus saved, year in and year out. Moreover, the worst feature of dishonesty in the trade of perishables and agricultural produce in general has been eliminated.

It is high time for a similar service to be established for the general public with reference to the very complex quality of certain tracts of land and the ratio of their future usefulness. The purpose of such a service would be to eliminate a whole network of fraud from the farm real estate market, and to protect individuals and the public from the serious results of ignorance or misconceptions about the real value of farm land. This service would counteract the speculative psychosis of the buying public in times of land boom as well as the opposite reactions affecting all interested parties when the farm real estate market is glutted.

In order to bring about this sorely needed improvement, I recommend that the proper legislative action be taken to establish a nation-wide farm land appraisal service. It should be obliged to appraise landed property for agricultural use, for any applicant, individual, or corporation, private or public, for whatever purpose, who pays a fee for this service, excluding appraising for tax authorities. The fees should be a matter of public knowledge. The total revenues from fees should cover the expenses of the entire service, but costs to clients should be charged according to certain classes of property rather than the specific costs involved. The appraisers should be paid an annual salary. The appraisals should be submitted to the clients in a standard appraisal form, but should give due consideration to the special questions clients want answered. Any advice or opinions about financial transactions—investment in such property, the size of the loan or the sale—should be strictly forbidden and excluded from the appraisal. The appraisals should involve no liability or obligation by the appraisal service beyond honest and properly executed appraising according to the rules adopted.

The appraisal service of the Federal Land Banks should be severed from the banks and reorganized as an independent and self-supporting service under the Farm Credit Administration, and offer its services for a fee to the Federal Land Banks, any other government agency, and the general public.

The following improvements may be expected from such legislative action:

Opening the Federal Land Bank appraisal system to the public, avoiding the infraction of any existing right, will make available at a reasonable cost to every interested party at least one type of honest, unbiased landed property evaluation—something more dependable than the more or less substantiated opinion of a single person. The very fact that such service becomes available will have a salutary influence on the appraisal practice of all the free-lance appraisers. It will also introduce an element of greater confidence and certainty into the farm real estate and farm debt relations fields.

In turn, the Federal Land Bank appraisal service will further mature through detachment from the banks, because the banks would not be able to continue their present practice of imposing upon the appraisers a part of the banker's financial decision relative to the size and condition of loans, or the wisdom of granting such loans at all. This is not and never should be the job of any appraiser. He has a sufficiently complex task to perform as it is. Adding to it a share in the functions of a banker blurs the line of responsibility, and weakens judgment, frequently to the detriment of the borrower as well as the bank. The added responsibility often leads to an unjustifiably low evaluation of the property.

Once the appraisal service is freed from its close integration with the Federal Land Bank structure, it will be able to make much headway by operating as a going business concern with the sole purpose of attaining the highest professional performance with economy. That the appraisals become accessible to the public and thereby to criticism from outside experts will have a wholesome influence. Federal Land Banks should obtain priority rank as clients of the appraisal service, so that their demand for appraisals will be satisfied irrespective of the pressure for appraisals by other clients.

To these great expectations I entertain, a note of warning must be added. It is a mistake to believe that through such a public appraisal service a land boom can be kept in check or can directly influence the general level of prices paid for farm land in good or bad times, or that it can prevent the mass delinquency of debtors. It would be just as rational to expect the medical examiners of the life insurance companies to lengthen the life of insured people in spite of a wave of influenza or a sudden frenzy among them to fly flivver planes without a pilot's training. The tidal waves of land values are directed by powerful economic forces, such as the



profitability of farming and the general level of prices for farm products. Psychology is involved but it creates only the margin of error in the amplitude, not the wave itself. All that can be done by a public appraisal service is to establish in the field of farm real estate and agricultural finance a system by which those who wish may at any time, obtain at reasonable cost a reasonably accurate report with *prima facie* evidence about the probable quality of a piece of property as an investment, a source of income, a security, or a home site. That, however, would be a vast improvement over the present state of affairs.

Objections of course will be made to this whole idea. They can be expected from four groups with vested interests: the Federal Land Banks, the private farm mortgage institutions, the private professional appraisal services, and the free-lance appraisers. The Federal Land Banks compete to some extent with other mortgage lending agencies, and consider their highly qualified appraisal service one of their best business assets in rendering loan service. That they are correct in this opinion is evidenced by the fact that at present certain large private mortgage lending agencies are "raiding" the appraiser staff of the Farm Credit Administration and the Federal Land Banks for their most experienced and outstanding men. (I consider this selective transfer of appraisers from semi-public service in the cooperative land banks to private concerns as beneficial to the public.) The Federal Land Banks have kept their appraisal reports so strictly confidential that they are not even shared with the National Farm Associations. As a matter of prestige, of convenience, and competition, the Federal Land Banks may oppose the idea of losing their appraisal monopoly, although careful study may lead to a different attitude.

Irrespective of this possible opposition, it seems highly desirable that a public appraisal service nevertheless be established. By virtue of their supervision through the Farm Credit Administration, the Federal Land Banks are semi-public institutions. Their appraisal service has been developed with the aid of public funds. It would continue to operate for the Federal Land Banks, but would unburden them of excessive costs, particularly in times like these when they have to maintain a larger appraiser staff than they actually need. The permanent appraisal staff could be much more fully utilized, function on a much wider basis, and be available in greater strength whenever the Federal Land Banks had to expand its loans. The benefits accruing to the public and indirectly to the

Federal Land Banks and their borrowers would by far outweigh the inconvenience the transfer of the appraisal service would initially mean.

The private mortgage lending agencies, such as the insurance companies, may resent the increased influence of a public agency. In fact, however, these companies and their interests would be tampered with in no way. They could and probably would continue their own appraisal systems. They would be able to check from time to time on their own appraisals, moreover, by applying to the public appraisal service for the evaluation of certain pieces of property.

Private professional appraisal services could raise only the objection that their business might suffer from competition with the public appraisal service. This allegation would be justified only if the public appraisal service were subsidized. My proposal envisages however, a self-supporting service living on the fees it charges. I expect that the private appraisal services would not be affected at all, and that some of the farsighted leaders in this business will even endorse the plan for a public appraisal service.

The few competent free-lance appraisers will neither lose nor gain by the proposed service. They have their clientele now and will have it in the future. Perhaps for convenience they will adopt the same forms and apply the same methods as would the public appraisers. It is to be expected that free-lance appraisers will propose that appraisers be licensed. For the reasons explained earlier about the weakness of all individual appraising, this arrangement is no workable solution. Public appraisers should not be part-time half professionals, but full-time salaried appraisers. To service and supervise licensed appraisers who derive a part of their income from other activities, and to be responsible for their integrity and their work is beyond the capacity of any public agency. Even if some states were to introduce a licensing system for rural appraisers, it would in no way affect the validity of my recommendations.

The only people who would lose a substantial part of their business would be the self-styled horseback guessers. This, however, is one of the main purposes of the proposed legislative action.

There remains the fear in mortgage banking circles that a public appraisal service will lead to further encroachment of the government upon private business. To avoid this danger requires the proper form of administration and legal limitations for the service.

## OLD-AGE SECURITY FOR THE AMERICAN FARM POPULATION\*

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**D**URING World War II, social security programs have been amplified considerably in the British empire and Latin America, and similar developments are now occurring in liberated Europe. In the United States, the war brought domestic reform to a virtual standstill; after V-E Day, however, the interest in domestic matters increased perceptibly, and many signs indicated that changes would soon be made in our social security system. That public opinion would back an expansion of the system has been indicated by a Roper survey showing that a plurality of the American people believe that the program should be extended.<sup>1</sup> A Gallup poll query indicated further that 60% of the people believe that "the Social Security program should be changed to include" the farm population.<sup>2</sup>

### *The Present Noncontributory Old-Age Security System*

In 1935 the Social Security act inaugurated an old-age insurance system, the cost of which is borne equally by employers and employees in covered industries. The same act also initiated a federal noncontributory program for old-age assistance; under this program the federal government contributes half the value of each pension granted by the state administration, the federal share of any assistance grant not to exceed \$20.

Social Security board samples show that the old-age assistance program has aided proportionately more old persons in country than in urban districts. According to a study made of the residence of those added to the old-age assistance rolls in a given period, 25.8% of the total were of rural-farm residence.<sup>3</sup> Since the rural-farm population exceeding 64 years of age represented only 21.8% of the total aged population, according to the last census, it is ap-

\* The writer is indebted to two University of Wisconsin faculty members, Dr. Kenneth H. Parsons and Erven Long, for critically reading this manuscript and making suggestions.

<sup>1</sup> Of those asked whether the government has gone too far or not far enough in providing security pensions, 15.4% did not know, 41.4% voted for an extension, 37.5% favored the present program as it is, and only 5.7% believed the program should be contracted. *Fortune*, Jan., 1945, p. 260.

<sup>2</sup> *Columbus* (Ohio) *Citizen*, Jan. 12, 1945, p. 3.

<sup>3</sup> Bureau of Public Assistance, Social Data on Recipients of Public Assistance Accepted in 1939-40, Research Memo. 1, Washington, April, 1941, Part I, p. 34.

parent that the agricultural population is numerically over-represented on the noncontributory pension list.

Although on the whole commendable, the assistance program is nevertheless inadequate from the standpoint of the farm population. Its defects can be said to fall into two main classes: first, the defects concerning the way in which the program is financed; secondly, those dealing with the requirements imposed upon applicants for assistance.

The size of the pensions is fixed by each individual state and is determined to a large extent by the state's fiscal capacity. For this reason federal contributory matching grants are made upon regressive principles: i.e., the larger the per capita income of the state, the bigger the per capita federal grant to the state tends to be, and the poorer the state, the smaller the grant. This has a direct bearing on the farm population, for there is a positive correlation between industrialization and income; since agricultural states tend to be poorer than industrial states, they receive less federal old-age assistance.

The fiscal factor helps to explain the considerable differences that exist between the states concerning the size of the assistance pensions granted the aged. Thus, in February of this year the average pension of the nation was \$28.59, but the state averages ranged from a low of \$11.26 in Georgia to a high of \$47.31 in California.<sup>4</sup> Since the pensions granted in agricultural states tend to be less than the national average, it is probable that the farm population receives inadequate old-age protection under the assistance program.

The conditions under which assistance is granted constitute another barrier to adequacy. These conditions may be roughly characterized as requiring that those who receive assistance be virtually paupers without relatives able to support them. Federal old-age assistance funds are authorized to be used only in sharing the cost of aiding the needy aged. The determination of need is left to the individual states, and the states, in an effort to keep costs down, have been inclined to interpret need almost in the spirit of the old Poor law.

During the past decade the conditions imposed on applicants for pensions have in general become decreasingly restrictive, but the system is still one which in many ways is unsatisfactory to the rural

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<sup>4</sup> *Social Security Bulletin*, April, 1945, p. 22.

rural population. The farmer's son who is struggling to climb up the agricultural ladder may be burdened with the responsibility for the care of his aged parents. The property provisions in many states debar an aged farm owner from receiving aid even if his income is inadequate, and even if aid is granted it is likely to be considered a claim against the estate.

Those whom the old-age assistance program has helped are primarily the individuals without property in the bottom income brackets who have no near relatives capable of supporting them. In the agricultural population this description would seem to apply most aptly to farm laborers. However, many of the laborers are excluded by residence requirements; in all but 13 states the requirement is the maximum permitted by federal law, the year preceding application, plus four others of the nine years preceding application.<sup>5</sup>

Negroes constitute another rural group which receives inadequate aid from the program. The Social Security board admitted on at least one occasion that the number of Negroes receiving assistance is low in proportion to the number who may need such aid.<sup>6</sup> Furthermore, in most states Negroes receive pensions slightly smaller than the pensions of whites.<sup>7</sup>

### *The Present Insurance System*

Of approximately 53 million in the labor force in 1943, about 31 million were protected by the federal Old-Age and Survivors' Insurance system, which covers most industrial and commercial employees. The roughly 22 million who were not covered by the insurance program included agricultural laborers, the self-employed, domestic and casual workers, and those employed by governmental agencies and nonprofit institutions. The somewhat more than 8 million engaged in agriculture represented by far the largest single group of gainfully employed workers not protected by the insurance system.<sup>8</sup>

Although agriculture is rigidly excluded from insurance coverage,<sup>9</sup> the farm population nevertheless in two major ways does con-

<sup>5</sup> Social Security Board, *8th Annual Report, Fiscal Year 1942-43*, Washington, 1943, p. 64.

<sup>6</sup> Social Security Board, *Fourth Annual Report*, Washington, 1939, p. 92.

<sup>7</sup> Sterner, Richard, *The Negro's Share*, New York, 1943, pp. 274-277.

<sup>8</sup> *Social Security Bulletin*, April, 1945, p. 38.

<sup>9</sup> The 1939 amendments to the system broadened the term "agricultural labor."

tribute at the present time to the fund from which benefits are paid. The actual incidence of the insurance taxes is not known, but there is some reason to believe that part of the burden is passed on to consumers in the form of higher prices; to the extent that this is so, the farm population, through its consumption, bears part of the cost of the insurance system.<sup>10</sup> The other manner in which agriculture bears part of the burden of the insurance program is more direct but involves only those members of the farm population who work from time to time in covered employment, paying insurance taxes but failing to meet the eligibility requirements for the attainment of insured status. Under the present system at least one-third, and probably more, of those who are taxed to support the system will never be able to qualify for benefits.<sup>11</sup> At the beginning of 1944 it was estimated that almost 32 million living persons, about half of the living persons who had contributed to the program, had not by that time attained insured status. Samples show that four-fifths of those who fail to gain such status fail because they have not worked in covered employment in enough quarters.<sup>12</sup>

Not known is the exact proportion of the farm population that works part of the time in covered employment but does not do enough of such work to gain insured status. However, several special surveys have been made. A six-state survey of migratory workers in 1940 revealed that 43.8% of them had paid some Social Security taxes in 1937-39, but only 6.4% had attained insured status. At about the same time a survey of local seasonal workers in Virginia showed that 12.3% had paid such taxes but that only 2% were insured. An investigation in Arkansas in 1941 disclosed that 18.1% of the operators had tax credits, but only 2.3% were insured, while 15.4% of the seasonal workers had credits, with 0.6% insured. In Iowa the same year it was found that 5.6% of the operators were credited, while 1.2% were insured, and 16.7% of the hired hands had tax credits, but only 1.3% had attained insured status.<sup>13</sup>

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and by this action excluded some half a million workers who previously had been classified as engaged in covered employment: A. J. Altmeyer, "Social Security for 'Industrial' Agriculture," *Social Security Bulletin*, March, 1945, p. 2.

<sup>10</sup> For a stimulating theoretical discussion of the incidence of payroll taxes see Part III of Seymour E. Harris' *Economics of Social Security*, New York, 1941.

<sup>11</sup> Witte, Edwin E., "Postwar Social Security," *Postwar Economic Problems*, ed. by Seymour E. Harris, New York, 1943, p. 273.

<sup>12</sup> Trafton, George H. "Uninsured Workers with Wage Credits under Old-Age and Survivors Insurance," *Social Security Bulletin*, June, 1944, pp. 3-10.

<sup>13</sup> For a more complete summary of the surveys noted above, and for bibliography-

The eligibility requirements of the original Social Security act were so lenient that many rural workers who spend part of their time in covered employment could expect to qualify for an annuity. The simple requirements were that the claimant for an annuity must have received some taxable wages in each of at least five years, and the total amount of his taxed wages must exceed \$2000. Under such a system not very many workers would pay taxes without receiving benefits; the fact that many now do so is a result of the 1939 amendments. According to the original act, it was impossible not to regain more than one had put into the system; if the age of 65 were reached without insured status being attained, the system paid the individual concerned a lump-sum equal to  $3\frac{1}{2}\%$  of his wages that had been taxed, and in case of death a lump-sum calculated in the same manner was paid to the estate of the deceased. Since the act scheduled a 3% tax on wages, the lump-sum represented a refund of taxes paid, plus a little interest.

The benefit provisions of both the original and the amended Social Security law stated that the maximum monthly benefit payable to any insurance account was to be \$85, and the minimum was to be \$10. But the original act provided merely for monthly annuities for insured individuals and for the lump-sum payments described. The amended system is much more complex in its benefit provisions, for it grants benefits not only to insured workers but also, under certain conditions, to their wives, widows, children, and parents.<sup>14</sup>

In spite of the many benefits for workers' dependents that were provided for under the amended and were absent under the original system, it was expected that the total cost of each of the plans would be approximately the same. In order to provide the new benefits for workers' dependents and yet to keep the total cost of the program from rising, two main steps were taken: (a) the size of the annuity payments to insured workers was decreased, and (b) the eligibility requirements were made so stringent as to ex-

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ical references, see Fred Safier, John Useem, Walter Quinn, "Farmers and Farm Laborers in Employment Covered by Old-Age and Survivors Insurance," *Social Security Bulletin*, June, 1943, pp. 18-24.

<sup>14</sup> For concise summaries of the original and amended insurance programs, see J. S. Parker, *Social Security Reserves*, Washington, 1942, pp. 68-74, and the Tax Foundation, *Social Security*, New York, June, 1944, pp. 13-20.

Because of the relative unimportance of the so-called "current" insurance benefits provided for in the amended act, for the sake of brevity this topic is not specifically discussed in this paper.

clude from insured status a large number of workers who were not fairly regularly engaged in covered employment; such workers would get back nothing of what they had put into the system, and taxes collected from them could be used in paying benefits to others.

To be eligible under the present system to receive a monthly annuity, a worker must have received wages of no less than \$50 in covered employment in each of at least half of the quarters elapsing after 1936, or after the quarter in which the age of 21 is attained, whichever quarter is later, and up to but excluding the quarter in which the age of 65 is attained. An alternative method of qualifying is to earn a minimum of \$50 in each of at least 40 quarters.

Two methods have been shown whereby the farm population is at present bearing part of the cost of the insurance program: (a) goods produced in covered industry, probably sell for higher prices than they would if no insurance system existed, and through consumption of such goods the farm population has contributed; (b) some members of the farm population who work from time to time in covered employment are taxed but gain no insurance benefits. Because of another factor that may take effect in the future, agriculture's share of the burden may increase. This will happen if it proves necessary for the federal treasury to contribute to the program, in which case federal taxes collected from the farm population will constitute part of the federal aid given the program. If covered payrolls become taxed at the scheduled rate of 6%, the system may or may not be self-supporting, depending on the actuarial assumptions that are made.<sup>15</sup> Assuming that a 6% levy would be sufficient if it went into effect as scheduled, the likelihood of such a thing happening is doubtful, for the present payroll tax of 2% was to have been increased to 4% in 1943, but this increase has been thrice blocked by Congress.

#### *Old-Age Insurance for Farm Laborers*

Since the time when proposals to launch a federal security system were beginning to be considered, there have been many who believed that agricultural wage labor should be included in the old-age insurance program. Those advancing the hope that agricultural labor be insured have stressed the need of such workers for

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<sup>15</sup> Office of the Actuary for the Board of Trustees of the Federal Old-Age and Survivors Insurance Trust Fund, "Actuarial Factors in Old-Age and Survivors Insurance," *Social Security Bulletin*, April, 1944, pp. 10-15.



protection and their inability to provide their own security. Hand in hand with this idea has gone a reiteration of the fact that foreign old-age insurance systems commonly include agricultural laborers.<sup>16</sup> Finally, it has come to be believed by some that the exclusion of agricultural labor from insurance protection is a contributing factor in making farm work unattractive and thus in helping to cause a farm labor shortage.<sup>17</sup>

The opposition of the powerful Farm Bureau Federation was one of the factors explaining the exclusion of agricultural laborers from the insurance program. Concerning old-age insurance, the Federation declared its opposition "until such time as agricultural prices are restored to parity levels."<sup>18</sup> At its annual convention last December, the Federation approved a resolution calling for "coverage of farm labor by old-age and survivors insurance under the Social Security act when, in the judgment of our board of directors, a practical plan for extending such coverage has been developed."<sup>19</sup>

The most emphasized and soundest of the arguments which have been advanced against the inclusion of farm workers has been the claim that to include them would present too many administrative difficulties.<sup>20</sup> It is claimed that agricultural wages would be difficult to compute because of the different manners in which wages are paid, and that the industry is of such a diverse, scattered nature, having such a variety of crops and types of work, seasonal and migratory as well as permanent, that it would be exceedingly difficult to lay down any general rules that a social insurance administrative board could follow in dealing with agriculture. Finally, it has been pointed out that many farmers keep inadequate records on which to base an insurance scheme, and that any scheme requiring those farmers who hire only a little outside help to keep track of payroll

<sup>16</sup> Agricultural employees receive old-age insurance protection in Belgium, Bulgaria, Chile, Costa Rica, Czechoslovakia, France, Germany, Great Britain, Italy, Netherlands, New Zealand, Peru, Spain, Sweden, Russia, and Uruguay: Wilbur J. Cohen, "Foreign Experience in Social Insurance Contributions for Agricultural and Domestic Workers," *Social Security Bulletin*, Feb., 1945, p. 5n.

<sup>17</sup> *Pennsylvania Farmer*, Dec. 9, 1944, p. 20.

<sup>18</sup> McCune, Wesley, *The Farm Bloc*, Garden City, New York, 1943, p. 173.

<sup>19</sup> Kahn, Dorothea, "Farmers Plan Abundance; Women Stress World Unity," *Christian Science Monitor*, Dec. 15, 1944, p. 9.

<sup>20</sup> For an elaboration of these difficulties consult the index of the Ways and Means Committee's Hearings on the Security Act Amendments; see "Administrative difficulties of insurance coverage," a sub-heading under "Agricultural employment"; House of Representatives, 76th Congress, first session.

deductions would cause these farmers disgustedly to throw their hands in the air.

In all probability the administrative difficulties could be overcome, for similar difficulties in covered industries have not been found to be insuperable. A possible solution to the problem of evaluating the different kinds of perquisites throughout the country is a periodical listing by the Social Security board of the regional values of the chief types of perquisites.<sup>21</sup> If the English system of flat contributions and flat benefits were introduced for American agriculture, the whole problem of perquisites would be sidestepped. Perhaps, even with differing benefits and contributions, the question could be handled with administrative ease by leaving it to the discretion of the parties concerned. If this happened, an informal custom might spring up whereby the cash value of perquisites to be received might be agreed upon by worker and operator before work began; the agreed-upon figure might even be put in writing, such a document to be binding unless obviously unreasonable.

To minimize bookkeeping, the favorite suggestion of those who advocate insuring farm workers is a stamp plan, many varieties of which have been used abroad, and many modifications of which have been suggested for usage in this country. Under all the stamp plans the farm operator would buy the stamps and would be reimbursed for half the cost of such purchase by deductions he would make from the worker's wages. At the end of each pay period—day, week, or month—the stamps would be pasted in the employee's book provided for the purpose, and the employer would "cancel" the stamps by writing on them in ink. The book would be sent periodically to the Social Security board, which would then credit the worker's insurance account with the value of the stamps in the book.

The stamps need not have many denominations. If the value of the tax stamps were figured on the basis of the wages to the nearest dollar, the only denominations that would be required at present would be 2¢, 10¢, 50¢, and \$2.50. The stamps could be used conveniently if a wage-class plan were introduced to simplify matters. Under a two-class system, for instance, only two kinds of stamps would be necessary.<sup>22</sup>

<sup>21</sup> Corson, J. J., "Agricultural Workers and Social Insurance," *THIS JOURNAL*, Feb., 1942, p. 293.

<sup>22</sup> Murray, Merrill G., "Can We Insure Domestic and Farm Workers?" *American Labor Legislation Review*, Dec. 1940, pp. 159-163.

As compared with other lines of endeavor which have a comparatively large wage bill to meet, agriculture would be relatively unaffected if a tax were put on payrolls to cover the cost of social insurance. The cash wages per farm, according to 1940 census figures, averaged only \$346. Estimating that about a third of farm wages are paid in the form of perquisites,<sup>23</sup> it can be seen that the total wages per farm were around \$529. Thus in 1940 the average farm operator would have contributed \$5.29 yearly into the old-age insurance fund for his employees. The majority of operators, however, would not be affected at all because most of them hire no wage labor. Census figures show that only 37% of the farms spent money on labor in 1939. Furthermore, 75% of the total wage bill was expended by the 16% of the farms in the top value-of-product brackets.

The inclusion of farm labor in the insurance plan would, however, require some adjustments, especially relating to incidence. A security program also might give some encouragement to share-cropping and tenancy, causing the break-up of farms which had employed wage labor.<sup>24</sup> If the program did result in an increase in share-cropping and tenancy, a solution might be to consider the landlord as the employer, requiring him to pay social security taxes on the income the tenant earned from the land; a solution along these lines was part of a scheme begun in France in 1935.<sup>25</sup>

Another possible result of the payroll levies would be an acceleration of the pace of mechanization of agriculture, for, with labor made more expensive, such substitution is to be expected. Increased mechanization tends to increase the size of the production unit, but any trend in this direction would be counteracted to some extent by the fact that the insurance program would give a competitive advantage to small family-operated farms, for such farms would not have to meet payroll levies.

The program also might tend to make the wage earner "more reluctant to undertake the risks of farm ownership if such a change in his status were to remove him from the protection of social insurance and possibly saddle him with the responsibility for the pro-

<sup>23</sup> Corson, J. J., "Agricultural Workers . . .," *ibid.*, p. 289.

<sup>24</sup> Something similar to share-cropping resulted in the English fishing industry when unemployment insurance was introduced. Unemployment Insurance Statutory Committee, *Share Fishermen in Relation to the Unemployment Insurance Scheme*, H.M.S.O., London, 1936.

<sup>25</sup> Blaisdell, Thomas C., Jr., "Old-Age Insurance for Agricultural Workers in Western Europe," *Social Security Bulletin*, June, 1938, pp. 20-21.

tection of others."<sup>26</sup> The program also would encourage more mobility on the part of older workers, for they would be less interested than they are at present in maintaining their state residence in order to qualify for old-age assistance.

No valid objections are apparent to the inclusion of agricultural laborers, if the insurance program is considered alone. But such a step should be taken cautiously, for "So long as eligibility for benefits and the amount of benefits payable are directly related to a worker's past earning and employment record, the formal coverage of low-paid and irregularly employed workers in a social-insurance program may be a dubious advantage. For though legally covered they may not qualify for benefits, or if eligible they may receive lower payments than they could secure under some other program."<sup>27</sup> In other words, agricultural laborers should be included only "as and when revision of the benefit formulas and the minimum earnings requirement offer assurance that the benefits received . . . will be superior to those available under alternative security measures," according to the National Resources Planning Board.<sup>28</sup>

Chief among the "alternative security measures" is the old-age assistance program. When a comparison is made between the two programs, the wisdom of insuring agricultural laborers appears doubtful. When the assistance program, in June, 1944, was granting pensions averaging \$27.55 per month, the insurance system at about the same time was paying its aged beneficiaries monthly annuities averaging only \$20.89. The \$20 figure included wives widows, and parents of insured workers, but the retired workers themselves were receiving annuities averaging only \$23.53.<sup>29</sup>

It might be argued that the insured worker could be living quite well in his old age, because children and aged wife might also be getting annuities because of the husband's insurance account. But

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<sup>26</sup> Hopkins, William S., *Social Insurance and Agriculture*, Committee on Social Security, Social Science Research Council, Pamphlet Series No. 5, Washington, Sept., 1940, p. 31.

<sup>27</sup> Security, Work, and Relief Policies report to the National Resources Planning Board of Committee on Long-Range Work and Relief Policies, Washington, 1942, p. 459.

<sup>28</sup> N.R.P.B., *National Resources Development Report for 1943*, Washington, 1943, p. 77.

<sup>29</sup> Social Security Board, *9th Annual Report, Fiscal Year 1943-44*, Washington, 1944, p. 82.

"Social Security Board Begins to Pay on Its Millionth Insurance Benefit," *Christian Science Monitor*, Aug. 9, 1944.

not many men over 64 have dependent children under 18 and hence eligible for children's insurance benefits. And, while the wife of an insured worker may be receiving an annuity, the wife of a man on the assistance rolls may also be receiving assistance. Furthermore, the noncontributory benefits are less widely dispersed around their average than the annuities of retired insured workers are around theirs. In short, the insurance benefits received by those in the low income brackets compare unfavorably in size with assistance benefits; to change this anomalous situation, it has been suggested that the minimum monthly insurance benefit payment be raised above its present \$10 level.

A further disadvantage of the insurance as compared with the assistance scheme, as far as the agricultural laborers are concerned, is that the insurance benefits must be paid for, whereas the assistance pensions are virtually free to the individuals who receive them. Thus, assuming for the moment that farm laborers could receive insurance benefits totaling as large as noncontributory pensions, the net result of including such workers in the present insurance instead of the assistance system might be to subtract from the aggregate income of the class an amount about equal to the total of the workers' insurance taxes.

From the financial viewpoint of the operator who hires labor, extension of the insurance program to his workers would appear to be undesirable. Part of the farmer's tax dollar, of course, goes to pay old-age assistance, and extending insurance protection to agricultural laborers would diminish the necessary amounts spent on assistance. Thus the operator's insurance taxes would not represent a wholly new burden, for part of what would have been paid for assistance would be paid instead for insurance. Probably, however, the other taxes paid by the operators would not be decreased by an amount commensurate with the burden of the new insurance taxes. Therefore, if the operators were unable to shift their insurance taxes, a net additional burden would result therefrom.

#### *Old-Age Security for Farm Operators*

The extension of social insurance to the self-employed would be desirable from the point of view of agriculture, for the some six million operators and their families constitute the greatest part of the farm population, and the income of most operator families is ordinarily meager. The exact form that old-age protection for the

self-employed should take, however, is not so clearly evident as the need for it.

Such protection might, for example, be furnished as part of a broad security program like the Wagner plan. The Wagner bill introduced in Congress in May of this year would include the self-employed in a general social security system to provide, among other things, for health, unemployment, disability, retirement, and survivors' benefits. Under this plan employees would pay a 4% tax on their wages, and employers would match their employees' contributions. The self-employed would receive retirement, survivors', extended disability, and health benefits, for which they would pay 5% of their income.<sup>30</sup> Indications are that the United States is not prepared, however, to accept such an inclusive social security system as the Wagner bill would provide. Certainly many American farmers are not ready for such a program, for both the Farm Bureau and the Grange, unlike the Farmers' Union, are opposed to government health insurance.<sup>31</sup>

A flat universal pension plan would be another method of providing the self-employed with old-age security. Such a plan could provide a pension either large or small and could be financed in almost innumerable ways. The only type of flat pension which has acquired any noticeable popularity in the United States is the non-contributory type exemplified by the Townsend plan. The objection to such a noncontributory type of flat pension system is that however small the size of the pensions at the outset, political pressure is likely to be brought to force the granting of progressively larger and eventually unreasonable amounts.

A system of sliding benefits for the total labor force would be another method of providing more old-age security for farm operators. This is the type of system which now protects employees in covered industry, and the framework of the present insurance system offers possibilities for the inclusion of the self-employed.

Under the present insurance system, the scheduled rate at which wages eventually are to be taxed is 6%, half borne by the employer. The self-employed might be included in such a program by levying

<sup>30</sup> *New York Times*, May 25, 1945, p. 10; for an unfriendly but informative review of an earlier Wagner plan (which instead of the above-stated 8% combined payroll levy on employer and employee and 5% tax on the earnings of the self-employed, provided for rates of 12% and 7% respectively), see The Tax Foundation, *Social Security*, Part II.

<sup>31</sup> "How Agricultural Groups Stand on Vital National Issues," *Christian Science Monitor*, Jan. 7, 1945, p. 7.

a 6% tax on his income; thus wage and other income would both be taxed at the same rate, and the self-employed, having no employer, would pay both the employer and employee contributions. Under such a plan, however, the moderately successful entrepreneurs would be helping to pay for the benefits of the less successful, and thus the political expediency of such inclusion is doubtful. Under the present system those with comparatively small incomes are scheduled to receive benefits worth more than what they and their employers have contributed, while those with larger incomes are to receive benefits worth less than the combined value of their own and their employers' contributions. Thus, after the scheduled full rates are in effect, "a worker of 20 entering the system . . . and earning \$250 monthly could, with his employer's contribution, purchase a private annuity of \$147.35 as against the \$85 monthly maximum under the Federal plan."<sup>32</sup>

Another suggested method for the inclusion of the self-employed in the present insurance framework is to permit them to pay at a rate of only three-fourths that of the combined employer-employee contributory rate, the government contributing the difference. In such a system the benefits the self-employed would receive would, for each income class, equal or exceed the value of their contributions.<sup>33</sup> Here again the question of political expediency arises. Those getting back benefits worth only the value of their contributions would not favor such a plan, for they would prefer to have more freedom in the use of their money. Farmers in this group, for instance, might prefer to put the money into land or farm machinery instead of into insurance protection.

Still another plan would allow the self-employed to pay at only half the combined employer-employee rate. In this case the federal subsidy would of necessity be larger. Such a plan would satisfy the self-employed, for in every income class benefits would be larger than contributions. Politically, however, this plan is inadvisable, for it might meet with the objection of labor. Labor could point out that actually it pays part of the employers' contributions, because, in many cases, if the employer had not been subject to a payroll levy, labor could have forced higher wages. Labor might

<sup>32</sup> Epstein, Abraham, "Social Security," *New Frontiers*, March, 1937, p. 21; the maximum was not changed in 1939.

<sup>33</sup> Safier, Fred, *Small Business Wants Old-Age Security*, monograph prepared for Special Committee to Study Problems of American Small Business, Sen. Com. Print No. 17, 78th Congress, first session, Washington, 1943, p. 32.

question the desirability of granting subsidized benefits only to the self-employed.

A politically feasible system that would include the self-employed might be one in which the federal government would bear part of the cost of all benefits. Thus, assuming that a level 6% levy would make the plan self-supporting, the payroll tax could be placed at 3%, the self-employed would contribute annually 3% of their net income under \$3,000,<sup>34</sup> and the government subsidy to the program would equal the sum of all the other contributions. If this plan were adopted, employees' incomes would be taxed at the rate of 1½%, to be matched by employers' contributions of equal size.

The idea of a government subsidy is not revolutionary, for, as the Advisory Council on Social Security pointed out, "Governmental participation in financing of a social insurance program has long been accepted as sound public policy in other countries."<sup>35</sup> The subsidy question, however, raises many problems. If a level-rate insurance arrangement is considered desirable, then the government subsidy in the early years of the program would not be needed for the immediate payment of benefits and so would go into the insurance reserve fund. It is not likely that such government contributions to a reserve fund would be politically feasible, and thus probably the amended law should merely read that subsidies would be provided when necessary to keep the insurance reserve fund from declining. Under these conditions, as the system matured, the size of the subsidy would grow.

The net cost of the subsidy to the treasury could be pared down by classifying insurance benefits as taxable income; thus, unlike the present procedure, the insurance premiums would be deductible but the benefits would be taxable, and so those in the upper brackets would pay back into the treasury as income taxes much of the value of the subsidized benefits received.

Besides the major matter of financing the program, other matters need be considered concerning the proposed inclusion of the self-employed. For example, the problem of estimating the income received by the self-employed is often difficult; the fact, however, that farmers do so yearly when they pay their income taxes shows that it can be done in an approximate manner. In the event of

<sup>34</sup> Under the present system, only the first \$3,000 in annual wages of an individual is taxable.

<sup>35</sup> "Final Report of the Advisory Council on Social Security," *Hearings Relative to the Social Security Act Amendments of 1939*, Committee on Ways and Means, p. 39.



farm operators entering the system, a facilitating device that social security administrators might utilize, at least in some doubtful income cases, could be to ascertain how much the farmer in question would be forced to pay to hire a worker to replace himself; the administrators might use as a guide the monthly wage rates published by the Department of Agriculture.<sup>36</sup>

Whether only the cash income of a farmer should be considered is a debatable question. In the collection of income taxes, the federal government at present considers only cash income, whereas the State of Wisconsin includes the value of products consumed by the farmer and his family. Probably, if only for the sake of administrative ease, only cash income should be counted.

The present insurance clause barring benefits to aged workers who have not retired would be difficult to enforce in relation to insured farm operators. To determine the earnings of those partially-retired operators who live with one of their children would appear to be rather difficult. If operators are to be included in the system, the repeal of this provision should be considered.

At least one other change in the system would appear to be called for if the self-employed are to be included. The present program calculates benefits in relation to quarterly earnings, but it obviously would be more feasible for farm operators and many others of the self-employed to report their annual instead of their quarterly earnings. If the program were changed from a quarterly to an annual basis, this particular obstacle to the proposed expansion of the system would be overcome.

However it be accomplished, it would appear to be socially desirable to furnish the farm population with more adequate old-age security. The writer has expressed his belief that such increased protection is not only desirable but possible.

<sup>36</sup> Altmeyer, A. J., "Social Security for Farmers," *Land Policy Review*, Spring, 1945, p. 7.

## HOW WOULD A FEDERAL SALES TAX AFFECT FARMERS?

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THE possibilities of a general sales tax as a war and postwar revenue measure of the Federal Government have received considerable attention in recent years. Since World War II began, numerous bills providing for many types of general and special sales levies have been introduced in Congress; and, although only a few special excises actually have been added to the law, agitation in some quarters for a general sales tax still is so great that most public and private postwar tax plans either approve or specifically reject one in their recommendations.

In this paper, a brief resume of Federal sales tax proposals and arguments commonly given for and against them, is followed by a study of probable effects on farmers of the particular type which presently seems to have widest support—the retail sales tax. An attempt has been made to show how significantly farmers would be brought within the orbit of the Federal tax structure by a levy of this sort; how provisions regarding exclusions, exemptions, rates, etc. would affect farm, as compared with nonfarm, groups; and how agricultural prices and the general cost-of-living level would be influenced. From a broad viewpoint, a Federal retail sales tax as applied to rural consumers presents an interesting study in tax incidence and demonstrates pointedly the significance of varying rates and exemptions of but one part of the whole tax structure.

### *Federal Sales Tax Proposals*

The idea of a Federal sales tax is not the product of thinking in the period of World War II. Proposals were made in this country during the Civil War when widespread opposition arose to the newly imposed income tax and the extended system of excise levies, but opposition prohibited enactment of a general tax at that time. After World War I, considerable strength developed in a new movement for such a levy after much higher rates on personal and corporate incomes were imposed in the revenue acts of 1917 and 1918. Agitation for abolishing some taxes and reducing the rates of others was accompanied by a demand for a general sales tax as a substitute revenue producer. The matter became an important issue, but great opposition again developed—this time from “representatives

of the Federal Government, farm and labor groups, producers of raw materials, and marketing and industrial organizations"<sup>1</sup>—and public interest subsided until the depression years of the 1930's. During those years and since, interest in a Federal sales tax has alternately risen and fallen in intensity, but it has existed throughout.

Revenue demands of World War II probably created an all-time peak in agitation in some quarters for such a tax, but while a much more extensive list of selective excises has been introduced into the Federal revenue system, no general retail sales tax has been included. Now the subject is receiving wide attention as a postwar revenue measure and increasing emphasis doubtless will be placed upon it as a substitute for some of the more undesirable present taxes, or as a compensation for lowering the rates on some taxes which will be retained in the postwar system.

### *Kinds of General Sales Taxes*

Specific proposals for a Federal sales tax vary widely in detail, but all of them recommend a broad coverage. Some would affect farmers much more than others. The *gross sales*, or *turnover* type, for example, would apply to most monetary transactions involving sales of agricultural and all other types of goods and services at wholesale, retail or other levels. When levied at the same rates, this form is the best revenue-producer of them all, but it is widely opposed for several reasons. The most serious objection lies in the fact that it would add greatly to the price of products made in several processes at different plants, but would affect very little the same product completely produced under one management. Thus the turnover tax discriminates against certain types and lines of business. Other reasons advanced for opposing this form of general sales levy are that it would require elaborate enforcement machinery, would complicate existing governmental price controls, and would tend to discourage investment by adding another burden to the productive process.

A manufacturers' sales tax has been advocated by many persons who believe it preferable to other forms. Since the sale of "manufactured" products would be the basis of the levy, this type would

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<sup>1</sup> For a more detailed history, see "Considerations Respecting a Federal Retail Sales Tax." *Revenue Revision of 1943* (Hearings before the Committee on Ways and Means of House of Representatives, 78th Cong., 1st Sess.), p. 1095 ff.

necessitate the determination of conditions under which a farmer would be regarded as a producer and as a consumer. Would home-canned foods, for example, be subject to the tax when sold by the farmer-canner? If large quantities of a food were produced on the farm commercially and then prepared for the market by processing, would they be taxed? In Canada such a tax has been used for many years; and, after many changes in detail, it now is regarded as successful. Three factors are said to have contributed to its acceptability there. These are: "(1) The capacity of the majority party to obtain changes in taxation as contained in the Finance Minister's budget speech, (2) the extent of the authority delegated to the administrators of the sales tax, and (3) the good sense with which discretion is exercised by the sales-tax administration."<sup>2</sup>

The Canadian Manufacturers' Association, however, has vigorously opposed the tax on grounds that it "(1) increased prices to consumers, (2) increased manufacturing costs, selling costs, and overhead, (3) made the manufacturers tax collectors, (4) discriminated against manufacturers who produce and sell a complete product, (5) discriminated between one section of an industry and another section of the same industry, and (6) increased the costs of government."<sup>3</sup>

Because of the many objections raised in this country to the *turnover*, and to the *manufacturers'* form, some proponents of general sales taxes have offered the *wholesalers'* type as a substitute. Since the tax would be placed only upon wholesalers' transactions, farmers would not be directly affected by the levy. Opponents have introduced many considerations in opposition to this tax. It would be confronted with even greater administrative difficulties than the others, it is argued, and besides not yielding a large revenue, it would lack the "essential" requisite of applying directly to consumers. For all the above and other reasons, most proponents of a sales tax for the Federal Government generally suggest the *retail* sales type as the most acceptable from the viewpoints of both taxpayers and the Government.

#### *General Considerations Favoring a Retail Sales Tax*

One of the arguments for a retail sales levy which is advanced particularly by business groups is that it would result in no appre-

<sup>2</sup> *Revenue Revision of 1943, op. cit.*, p. 1233.

<sup>3</sup> *Ibid.*

cial change in the present economic structure. The tax would be applicable only to sales of finished products (and services) to consumers and not upon the intermediate processes of manufacture even though they are separately developed in independent units. Since it would make no difference whether the seller is a wholesaler, manufacturer or retailer, there would be no tax advantage for purchasers to buy from one or the other, and hence no reason for reorganizations or realignments of businesses already established.

Another advantage attributed to a retail sales tax is that it is payable in small amounts "scarcely realized" as a burden, and there is "little delinquency." Thus the levy is convenient to pay—a desirable quality of any tax. The point becomes clearer if, for illustration, we consider the present Federal tax on cigarettes. Assuming a farmer buys one pack daily, it is far more "convenient" and "less burdensome" to pay 7 cents in tax daily for 365 days than to make one annual payment of \$25.55 for the privilege of smoking cigarettes. The volume of delinquency is small if the law is efficiently administered.

Since over 20 States and several cities now tax retail sales, this type of levy already is familiar to many taxpayers. This is advantageous if one agrees with the frequently made assertion that "a new tax is never good and no old tax is ever bad." Too, the experience gained by the States and cities in administering the tax might provide considerable aid to the Federal Government in working out details of operation on the Federal level.<sup>4</sup>

Other general considerations said to favor a retail sales tax may be summarized without elaboration as follows: (1) It is a good revenue producer for the levying body and is easy and economical to collect; (2) it reaches every family and individual, thus making everyone aid in the support of government; (3) it avoids "undue" exemptions to low-income families and persons and at the same time exacts higher amounts from those who spend heavily for such "non-essentials" as cosmetics, jewelry, or silverware; (4) it reduces spending—an especially desirable objective during periods of excessive inflationary tendencies; (5) it gives the taxpayer some option to escape the levy by not purchasing taxable goods and services;

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<sup>4</sup> While no effort has been made to analyze the arguments usually given for or against sales taxes (as summarized here), it is worth noting that a Federal retail sales tax undoubtedly would have important differences when compared with State or city taxes. This would indicate a source of confusion and compliance difficulty on the part of retailers and misunderstandings on the part of consumers in those jurisdictions already using a similar sales levy.

(6) it reduces the uncertainty of the distribution of tax burdens; and  
(7) it is a tax capable of being correlated well with progressive income and inheritance taxes in an integrated system.

*General Considerations Unfavorable to a Retail Sales Tax*

The primary objection opponents raise to a retail sales levy is its regressivity. That is, the burden rests more heavily (proportionately) upon farmers and others in the low income brackets than upon the wealthier, as shown in Table 1. For example, a consumer with a total annual income of only \$1,000 would pay taxes on about

TABLE 1. APPROXIMATE AMOUNT PER \$1,000 INCOME TAKEN BY RETAIL SALES TAX<sup>1</sup> FROM VARIOUS INCOME GROUPS, 1934

Income class	Percent income on which tax is paid <sup>2</sup>	Approximate amount taken by tax of: <sup>3</sup>	
		5 percent	10 percent
	<i>Percent</i>	<i>Dollars</i>	<i>Dollars</i>
\$1,000 and under	60.0	30.45	60.90
\$1,000 to \$2,000	58.6	29.30	58.60
\$2,000 to \$3,000	49.4	24.70	49.40
\$3,000 to \$5,000	42.9	21.45	42.90
\$5,000 to \$10,000	39.3	19.65	39.30
\$10,000 to \$25,000	31.7	15.85	31.70
\$25,000 to \$50,000	22.2	11.10	22.20
\$50,000 to \$100,000	18.4	9.20	18.40
\$100,000 to \$150,000	15.5	7.75	15.50
\$150,000 to \$300,000	12.1	6.05	12.10
\$300,000 to \$500,000	4.2	2.10	4.20
\$500,000 to \$1,000,000	2.5	1.25	2.50
\$1,000,000 up	1.0	.50	1.00

<sup>1</sup> Assumption of no exemptions is made.

<sup>2</sup> Estimates prepared by General Welfare Tax League on basis of statistics collected by *Business Week*, 1934.

<sup>3</sup> Based on table in Home Owner and the Sales Tax, Tax policy League, New York, 1935, p. 6.

60 percent of it, whereas one with \$125,000 annual income would pay taxes on less than 16 percent of his. The actual sales tax paid by each would depend upon the rate levied, of course, but at 5 percent the former taxpayer probably would owe about 30 dollars out of his \$1,000, while the other person would likely pay less than 8 dollars from each \$1,000 of his income. It is interesting to observe that the person with a million dollar income probably would pay a retail sales tax on only 1 percent of it, and his actual tax bill would amount to only 50 cents per \$1,000 income at a 5 percent rate.

Other general considerations inimical to a retail sales tax accord-

ing to its critics include the following: (1) It does not develop "intelligent tax consciousness," for the tax does not impress upon the taxpayer the social obligation to support government; (2) it presents many administrative difficulties such as determination of consumer versus producer goods (unless the latter were also taxed); (3) it may result in an arbitrary change of consumer spending (that is, from taxed to untaxed goods and services), and would tend to reduce total consumer purchases when they are needed to stimulate business and employment; (4) it makes no allowance for dependents, etc.; and (5) it upsets parity price determinations by price control agencies.

### *Effects Upon Farm and Nonfarm Groups Compared*

Proponents of a Federal retail sales tax do not agree on details, although there is general approval of provisions for "broad" coverage. Since there is widespread opposition to any Federal retail sales tax, and many different recommended rates, exemptions, etc., it is difficult to select the type most likely to be passed by Congress—even for illustrative purposes. Some assumptions, nevertheless, can be made and these may be used in an analysis of probable effects of a retail sales tax on farmers. No attempt has been made to consider all possible combinations of provisions. Indeed, only those which appear to have received most discussion in hearings before Congress, or in recommended postwar plans are examined. In any sales tax law, provisions must take into consideration both the taxpayers' interest and the administrative problems involved. That is, both equity and the taxpayers' cost of compliance on the one hand, and the volume of revenue and administrative difficulties on the other are factors of considerable importance in any revenue measure.

*Exclusions.* The retail sales tax without exemptions generally is assumed to apply to all retail sales of goods and to a selected list of services. Nevertheless certain "exclusions" are permitted in most State sales levies, and Federal proposals commonly allow the same items. "Goods" include tangible personal property (with certain exceptions) and "services" include repair and fabrication services, laundry and dry cleaning, barber and beauty shop services, some public utility services and rental of taxable goods. Classes of goods usually excluded from the sales tax are fuel; transportation services; commercial, industrial, and agricultural machinery; feed, seed, and fertilizer; and articles sold to the Federal Government.

Thus the farmer would be subject to a tax on all his retail purchases except the few enumerated above which are primarily items used in the production process, that is, producers' goods. Because of the administrative difficulties involved, isolated transactions probably would not be reported, such as the sale of a small quantity of fresh meat to a neighbor by a farmer. It should be pointed out that administrative problems arise in this connection. Just what is a consumer good? What part of purchases made by farmers are used in production? Definitions become important in administering a retail sales tax.

*Rates and Revenue.* The question of rates is of particular importance to farmers and others subject to a sales tax. While they may be determined quite arbitrarily, often they are selected because of

TABLE 2. ESTIMATED YIELDS OF FEDERAL RETAIL SALES TAX, 1944

Type of sales tax	Tax base	Estimated yield at 5 percent rate	Estimated yield at 10 percent rate
	<i>Million dollars</i>	<i>Million dollars</i>	<i>Million dollars</i>
With exemptions	63,180	3,159	6,318
Food exemption	39,590	1,979	3,959
\$170 per capita exemption	41,658	2,088	4,166

*Revenue Revision of 1943*, op. cit., p. 1151 ff. Estimates under the \$170 per capita exemption are based upon a total civilian noninstitutional population of 126.6 million. For a later estimate, see H. P. Wald, "Variations of Retail Sales Taxes," *American Economic Review*, June 1944, pp. 281-302.

the volume of revenue different levies would raise. Hence there may be a close association between rates and the revenue desired from a given form of tax. This fact probably accounts for the wide variation in recommended figures for a Federal sales tax—from 2 to 10 percent or more. Few persons believe a graduated sales tax could be made effective and therefore a fixed percentage of sales value normally is suggested.

The rates most generally recommended for a Federal levy appear to be 5 and 10 percent. Most States having sales taxes impose rates not to exceed 2 or 3 percent, but it is thought that Federal revenue demands are so great, higher rates are desirable. Estimated yields of a Federal tax at 5 and 10 percent with, and without, exceptions are indicated in Table 2. As assumed in the Treasury study previously referred to, estimated receipts are based upon retail sales and services for the calendar year 1944, and certain classes of commodities are excluded from the calculations.

It goes without saying that a 10 percent levy on expenditures is



a heavy tax and that so high a rate would be particularly burdensome to low-income farm and other groups. It is argued, however, that this tax could be integrated with high personal income taxes which, to a large extent, are paid by nonrural people, and that two would result in a fair degree of equity. There are many who believe the Federal levy should not exceed 5 percent under any circumstances. The revenues received, of course, would be approximately half those under the above rate, and a 2 percent tax would yield a correspondingly less amount. It is interesting to observe that a sales tax excluding food sales will yield approximately the same revenue for the Government as one with a per capita exemption of \$170.

As is indicated in Table 3, there is no uniform agreement as to the exact yield of this kind of tax. The figures given there appeared in

TABLE 3. ESTIMATED YIELDS OF A 10 PERCENT FEDERAL RETAIL SALES TAX

Source of estimate	Estimated yield
	<i>Billion dollars</i>
United States Treasury.....	5.8
Bureau of Foreign and Domestic Commerce.....	5.4
Office of Price Administration.....	4.9
National Association of Manufacturers.....	4.8
Raw Materials National Council.....	5.3
Brooklyn Chamber of Commerce.....	4.5
National Retail Drygoods Association.....	5.0
A. G. Hart, Iowa State College.....	5.0
Pennsylvania State Chamber of Commerce.....	6.6
American Retail Federation.....	6.0

*Revenue Revision of 1942*, Hearings before the House Committee on ways and means, 77th Congress, Second Session, Volume 1. Assumption is made that tax would apply to sales of all tangible personal property except those to Federal, State and local governments.

"Revenue Revision of 1942," and therefore are based upon sales of an earlier year than the one used in table 2. It should be emphasized that the sales tax rate probably would be determined after decision is made as to the amount of revenue needed from a sales tax.

### *Effects of Other Provisions*

*Exemptions.* Because of the severe regressivity of a retail sales tax as indicated previously, some proponents of such a levy have recommended that liberal exemptions be provided. Others object to any form of exemptions. The most frequently mentioned arguments against food exemptions are as follows: (1) They reduce

receipts too much, (2) they eliminate taxation of luxury food items which should be taxed, (3) they introduce many administrative difficulties, and (4) they discriminate against other "necessary" products, such as clothing. Objections to a per capita exemption generally include (1) difficulty of administration, (2) arbitrariness of amount exempt, (3) unevenness of resulting burden since certain groups, such as farmers and children purchase fewer taxable items than do others, thus making desirable a complicated graduated scale of amounts exempt, and (4) reduction in public receipts.

Nevertheless, exemptions are widely urged. In the illustration given above (Table 2) the figure of \$170 was assumed. It is believed that this amount, though somewhat arbitrarily chosen, probably would be enough for minimum annual food expenses, for one person, and it would require about \$170 exemption to offset a food exemption so far as revenue to the Government is concerned. Since the effects of a sales tax with no exemptions, one with all food exempt, or one with a per capita exemption would be very different on taxpayers, particularly farmers, it is desirable to consider in some detail these various forms.

The peculiar significance of exemptions to all consumers is indicated in Table 4. Assuming a Federal sales tax of 10 percent it is noted that those receiving an average cash income of less than \$500 would pay an *effective* rate of 9.4 percent with no exemptions, 5.7 percent if food were exempt, and -3.8 percent if \$170 per capita were exempt. The effective rates paid draw closer together as income rises. For example, consumers with an average income exceeding \$10,000 would pay 2.1 percent with no exemptions, 1.4 percent with food out, and 1.7 percent when \$170 is allowed each taxpayer.

In this table also is seen a clear demonstration of the effect of exemptions on the regressivity of a sales tax. In the brackets given, the average effective rate begins at 9.4 percent for poorer farmers and other taxpayers, and drops to 2.1 percent for those with more than \$10,000 income. The effective rate declines as income increases also where food is exempt (from 5.7 to 1.4 percent in the brackets given above). In the third category, however, when the exemption is \$170 per capita, the poorest person pays -3.8 percent and the effective rate rises to a high of 3.9 percent in the \$2,500 to \$4,000 income brackets and declines to 1.7 percent in the top group. Thus in this latter case, the rate is first progressive and then

regressive in effect. From Table 4, then, it would appear that poorer taxpayers would suffer less burden with an exemption of \$170 than in the other situations.

*Size of Family.* The size of the farmer's family has an important bearing upon the burden of a retail sales tax. Normally, taxpaying

TABLE 4. ESTIMATED PERCENTAGE OF CASH INCOME TAKEN BY 10 PERCENT FEDERAL RETAIL SALES TAX BY INCOME GROUPS, 1943

Income group	Tax as percentage of average income		
	No exemptions	Food exemptions	\$170 per capita exemption
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Under \$500	9.4	5.7	-3.8 <sup>1</sup>
\$500 to \$1,000	7.7	4.5	1.6
\$1,000 to \$1,500	7.2	4.3	3.3
\$1,500 to \$2,000	6.6	4.0	3.6
\$2,000 to \$2,500	6.2	3.9	3.8
\$2,500 to \$3,000	5.9	3.7	3.9
\$3,000 to \$4,000	5.5	3.5	3.9
\$4,000 to \$5,000	5.1	3.4	3.8
\$5,000 to \$7,500	4.5	3.0	3.5
\$7,500 to \$10,000	3.8	2.6	3.0
\$10,000 and over	2.1	1.4	1.7
All levels	5.0	3.2	3.2

<sup>1</sup> The meaning of this "minus" quantity is that the average taxpayer would receive an excess of personal exemption over taxable expenditures equal to 3.8 percent of his income.

*Revenue Revision of 1943, op. cit.*, p. 1166. Based upon data from Division of Research, Office of Price Administration and Division of Research and Statistics, Treasury Department.

capacity varies inversely with the number of dependents, and in the income tax this fact is recognized in the personal exemption provision. A sales tax with no exemptions falls heavily upon the taxpayer with several dependents, especially one who also has a small income. This is true because a very large portion of all income goes for expenditures subject to the tax. As a segment of the population, farmers have a larger average number of persons in the consuming unit than do other groups. In 1941, the rural average was 4.03, and the comparable urban figure was 3.09 persons.<sup>5</sup> Thus, other things being equal, a Federal retail sales tax with no exemptions would press more heavily upon farm than upon city people.

<sup>5</sup> "Spending and Saving of the Nation's Families in Wartime," Bul. No. 723, Bureau of Labor Statistics, Dept. of Labor, 1942.

With food exempt, part of the burden on big families is removed, because the percentage of all living costs attributable to food is relatively high, although as pointed out later, this factor is less important in rural than in urban families due to the fact that such food is produced on the farm and would not be taxable in any case. The large family would be least burdened if an exemption of a per capita allowance is made. In this case only, would the concept that tax capacity varies inversely with the number of dependents be recognized to the fullest extent.

The influence of the family size is indicated statistically in Table 5. In the lowest income bracket given (\$750 to \$1,000), size of family is relatively unimportant in the percentage paid when there is no exemption, and when food is exempt. The situation is very different in this income class, however, if the \$170 per capita exemption is considered. Here the family of one pays 3.6 percent of his income in tax, but the family of eight receives an exemption credit 1 percent greater than his income. With this type of exemption, the larger families would pay no sales tax. In the highest income group portrayed in the table (\$5,000 to \$10,000), no families are exempt from all the tax, but the percentages paid vary although not as much as in the case of low-income brackets.

*Food Produced on Farm.* The choice of a food, or a per capita exemption is significant to farmers for another reason. A food exemption would be a disadvantage to farmers as compared with other groups since farmers produce a large portion of their own food and in any case this would not be subject to the tax. This would be partially compensated for, particularly during the war, because many urban people also produce some of their own food. Some estimates indicate that home-produced food accounted for 57 percent of the total money value of food for farm families in 1941.<sup>6</sup> The amount of food produced varies greatly among farm families, and the cost of producing it should be evaluated to complete the picture.

The home food factor has been cause for some to recommend that farm groups be differentiated from urban groups in the amount of exemption if a per capita exemption is granted. It is said that the cost of a "maintenance" food budget for a family of four would require about \$448, based upon prices in August 1943.<sup>7</sup> This

<sup>6</sup> "Rural Family Spending and Saving in Wartime," U.S.D.A. Misc. Pub. 520, June 1943, p. 32.

<sup>7</sup> See *Revenue Revision of 1943, op. cit.*, p. 1164.

amount, however, varies with a number of factors. For instance, price levels change from time to time and the amount allowed would need to be changed in proportion. The determination of "necessities" would be an acute problem, since rural and urban

TABLE 5. TEN PERCENT RETAIL SALES TAX WITH NO EXEMPTION, WITH FOOD EXEMPTION, AND WITH \$170 PER CAPITA EXEMPTION, AS A PERCENTAGE OF INCOME AT SELECTED INCOME LEVELS BY SIZE OF FAMILY, 1935-36

Income class and size of family	Average income	Persons per family (assumed)	Tax as percentage of income with:		
			No exemption	Food exemption	\$170 per capita exemption
	<i>Dollars</i>	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
<b>\$750- \$1,000</b>					
1	873	1	5.6	2.2	3.6
2	869	2	5.3	2.2	1.3
3-6	887	4	5.8	2.3	-1.9
7 up	886	8	5.2	2.2	-1.0
<b>\$1,500- \$1,750</b>					
1	1,617	1	4.7	2.0	3.7
2	1,612	2	4.8	2.3	2.6
3-6	1,625	4	5.2	2.4	1.0
7 up	1,628	8	5.4	2.3	-3.0
<b>\$2,500- \$3,000</b>					
1	2,703	1	4.0	1.8	3.3
2	2,716	2	4.1	2.2	2.9
3-6	2,729	4	4.7	2.3	2.2
7 up	2,746	8	5.0	2.3	.1
<b>\$5,000-\$10,000</b>					
1	6,827	1	2.7	1.4	2.4
2	6,926	2	2.9	1.8	2.4
3-6	6,855	4	3.4	1.9	2.4
7 up	6,757	8	3.9	2.2	1.9

Derived from data for 1935-36 in "Family Expenditures in the United States," National Resources Planning Board (1941), and "Consumer Expenditures in the United States," National Resources Committee (1939). Both urban and rural families are included in these calculations.

necessities are not necessarily the same. Also, adult dependents consume more than children, and an adjustment for the two would be desirable.

### *Farmer Expenditure Habits and Noncash Income<sup>8</sup>*

Estimates indicate that farmers with money incomes over \$1,000 spend significantly less on taxable goods and services (including food) than nonfarm groups—as shown in Table 6. Thus as a group,

<sup>8</sup> Statistical data for this section are taken from H. P. Wald, Variations of Retail Sales Taxes, *American Economic Review*, June 1944, pp. 291-292.

they would pay less retail sales tax. For income groups receiving less than \$500 the opposite would be true. Since the number of persons per farm family in this group is much larger than that per nonfarm family, the rural consuming unit probably would spend more on taxable goods, although not in exact proportion to the number of persons.

TABLE 6. EXPENDITURE PATTERNS AND EFFECTIVE SALES TAX RATES BY MONEY INCOME LEVEL, FARM AND NONFARM CONSUMERS, 1941

Net money income class	Average number of persons per consumer unit	Average Income		Average taxable spending		Average food purchases <sup>2</sup>	Food as percentage of taxable spending including food <sup>3</sup>	10 percent sales tax including food as percentage of money income
		Money	In kind <sup>1</sup>	Includ- ing food	Exclud- ing food			
<i>Dollars</i>	<i>Number</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Percent</i>	<i>Percent</i>
<b>Nonfarm consumers:</b>								
0- 500	2.01	300	163	226	76	150	66	7.5
500-1,000	2.77	742	172	469	184	285	61	6.3
1,000-1,500	2.89	1,243	150	732	314	413	57	5.9
1,500-2,000	3.35	1,737	162	996	454	542	54	5.7
2,000-3,000	3.45	2,449	176	1,372	657	715	52	5.6
3,000-5,000	3.72	3,726	213	1,904	964	940	49	5.1
5,000 and over	4.35	11,696	358	5,810	2,137	1,673	44	3.3
<b>Farm consumers:</b>								
0- 500	3.74	270	417	267	136	131	49	9.9
500-1,000	4.04	737	529	471	248	223	47	6.4
1,000-1,500	4.74	1,226	537	625	330	295	47	5.1
1,500-2,000	4.30	1,701	602	779	442	337	43	4.6
2,000-3,000	3.52	2,439	603	1,014	572	442	44	4.2
3,000-5,000	4.46	5,599	719	1,272	757	515	41	2.3
5,000 and over								

<sup>1</sup> Includes the value of home-grown food, housing of home owners, free fuel, and other goods received without direct money payment.

<sup>2</sup> Food expenditures in the original study include purchases of alcoholic beverages and other items which would probably be excluded from a food exemption under a sales tax. It is believed, however, that this fact does not significantly distort the above figures insofar as relative comparisons between farm and nonfarm consumers are concerned.

H. P. Wald, op. cit., p. 292. Computations based on statistical data published in "Spending and Saving of the Nation's Families in Wartime," Bul. No. 723, Bur. of Labor Stat., Dept. of Labor (1942).

It is true that farm families in all income classes receive larger amounts of noncash income (home-grown food, fuel, and house rental) than do nonfarm groups. Since this is nontaxable, farm families in all income groups would pay a smaller percentage of income (under a sales tax without exemptions) than would nonfarm groups.

### *Effects of Sales Tax on Farm Prices and Cost-of-Living Index<sup>9</sup>*

One other aspect of the effects of a Federal sales tax, particularly significant under present war conditions, remains to be mentioned.

<sup>9</sup> For a somewhat more detailed statement, see *Revenue Revision of 1943*, p. 1194 ff. from which estimates in this section are taken.

By raising the level of farm parity prices, a retail sales tax levied under present parity provisions and with neither food nor per capita exemptions would affect many agricultural prices and retail food costs. The tax would apply to sales of many items whose prices enter the index used by the Department of Agriculture in the parity formula. A 10 percent Federal retail sales tax on food, clothing and similar goods (but excluding feed, seed, fertilizer, fuel, and agricultural machinery) would increase the parity index by 6 or 7 percent (depending upon the level of the index), which would raise the level of farm parity prices correspondingly. According to estimates made by the Bureau of Agricultural Economics and the Treasury in the early part of 1943, the index of prices received by farmers would have averaged 4 percent higher in 1944 than in 1943 if the tax had become effective in July 1943. Of course advances at the farm level would result in higher prices at the wholesale and retail levels; thus the increase in retail food prices during 1944 would have approximated 6 percent. With *direct* price effects of a 10-percent tax added, average retail food costs would have been 17 percent higher in 1944 than in 1943.<sup>10</sup>

Commodities other than food also would have been affected by a retail sales tax. Indeed, indications are that the effect on parity prices of a 10-percent tax would have been to increase the cost-of-living index of the Bureau of Labor Statistics by approximately 3 percent in 1944 in addition to the cost-of-living increase occasioned by the direct effects of the tax. The total increase then would have raised the cost-of-living index some 10 percent. It should be pointed out that these farm price increases would have raised gross incomes of processors, middlemen, and farmers in 1944 by approximately 2 billion dollars, according to estimates. To balance this, however, consumers would have paid about the same amount in added food costs in addition to the higher prices due to the direct application of a sales levy to retail food prices.

If per capita exemptions were permitted in a Federal sales tax, the effect on prices would be the same as those just discussed. However, a tax with food exempt obviously would have less effect upon food prices. As Mr. Wald concludes,<sup>11</sup> "A food exemption, on the

<sup>10</sup> These and supporting estimates were based upon assumptions valid in the early part of 1943. Any change in parity legislation or in the economic considerations involved might necessitate revision of the figures or even invalidate them.

<sup>11</sup> H. P. Wald, *op. cit.*, p. 295.

other hand, would reduce the tax effects on farm prices, if equal-rate taxes are compared, since the prices-of-food items included in the prices-paid index would not be directly affected by the tax. But, if the comparison is made in terms of equal-yield taxes, the tax with food exempt would cause a slightly higher boost in parity and market prices than would the tax without exemptions."

### *Summary and Conclusions*

There are several considerations favoring, and others inimical to, any form of sales tax. If one is adopted by the Federal Government in the postwar period, it is likely to be based upon retail transactions rather than upon gross sales or those of manufacturers or wholesalers. The chief virtue of a Federal sales tax appears to be its ability to produce revenue inexpensively while the primary objection lies in its gross regressivity.

Some provisions such as those establishing coverage and rates would affect farmers precisely as they would others. In other respects, however, the impact of a retail sales tax upon rural people would be quite different. A tax with no exemptions, one with food sales not included, and one with say \$170 annual per capita exemption, would have very significant differences when effects upon various groups are considered. Size of family and volume of home-produced food, and expenditure habits also are important factors to be taken into account in a sales tax. Finally, parity prices would be changed significantly with enactment of a Federal retail sales tax.



## POSTWAR PLANNING AND THE RURAL- URBAN BALANCE

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MOST thinking about a desirable postwar employment pattern assumes that the way to prosperity in the future will be the same as it has been in the past. It assumes, in other words, that we shall have a constantly greater expansion of urban industry than of agriculture, with a corresponding further shift of population from the country to the town. Not back to the land, but forward to yet more factories, must be the watchword. Full employment in say 1950, as the United States Department of Agriculture envisages the matter, will occupy about 55½ million full-time workers, some 8 million of them on farms and the rest in nonagricultural occupations. That number of workers will be required to produce a national income of 150 billions of dollars, which is about the lowest figure compatible with full employment and at the same time with maintenance of our living standards. But the distribution of these workers between farms and factories will be different from what it is now. It will involve the transfer of many hundreds of thousands from rural to urban jobs, and also provision for a steady *continued* transfer of workers in the same direction. In this general form come all workable plans for postwar full employment, with no exception whatsoever.

Necessarily, however, the proposed greater increase of farm than of factory production presupposes markets. On this head the formulations up to now are vague. Obviously, the markets must be either foreign or domestic; but beyond this truism the analysis falters, for a reason which to be sure we must acknowledge to be formidable. If the market for an increased industrial output is to be sought in foreign trade, it must be exclusively a one-way proposition; it must involve additional exports but not additional imports. As a means of absorbing more production than would otherwise be absorbed, this foreign trade must be strictly an outlet and not an inlet. How to contrive, or even to justify such an arrangement, has economists baffled. On the other hand, the provision of a market at home for the desired increased industrial production obviously raises problems in income distribution. No wonder the dilemma persists. It should be resolved, nevertheless, in

favor of the domestic market, because a program simply for net exports would either speedily break down or head us straight for World War III, through the disruptive effect it would have on the world balance between farms and factories.

The purpose of this article is to consider some implications of the doctrine that the way to prosperity is through a greater increase of industrial than of agricultural activity. Undoubtedly, we need more expansion of factories than of farms, since the demand for industrial products can be stretched almost indefinitely while the demand for food cannot. Moreover, without a further shift to the side of industry we cannot fully profit by our farm technology, which enables agriculture to produce more and more food with less and less labor. These are truisms. But what are we to do with an increased industrial output? All possibilities boil down to some combination of three alternatives: (1) The increase in the factory output can be turned over to farmers, at constantly diminishing relative prices; in other words, on terms that will enlarge the farmers' income. (2) It can be sent abroad, with nothing brought back either in competitive or noncompetitive imports. As a disposal device, this proviso is indispensable; for if goods come in as payment for goods sent out, we have as much consumption to accomplish domestically as would have been necessary had the interchange not taken place. (3) Or the surplus can be consumed exclusively within the industrial community, through measures that will raise the buying power of the industrial personnel and of people in the associated trades, services, and professions. In practice, the disposal system would not present this simple threefold look. Some aspects of it might apparently defy classification; certainly, moreover, it would include some exchange of exports for imports. Nevertheless, from the standpoint of surplus disposal and of nothing else the three procedures mentioned and only these would be involved. Essentially, the choice would rest between foreign and domestic disposal of the surplus.

Foreign disposal of the surplus, it may be well to reiterate, necessarily implies net exportation of it. In other words, it forbids taking equivalent imports in exchange. With exports offset by imports, what we have is not really surplus disposal at all, but merely an alteration in the *form* of the goods supply. True, the new form may be more readily consumable than the old form; it may sometimes be much easier, for example, to move more pulpwood than more plumbing into consumption. Nevertheless, the consumption

even of the pulpwood requires consumer buying power. Unless consumption power rises proportionately with production power, consumption may lag almost as badly with foreign trade as without foreign trade. Truly reciprocal foreign trade, in short, is neutral as a surplus-disposal mechanism; it throws the matter back upon the home community, where indeed it belongs, as this article will try to show. On the other hand, foreign surplus disposal, by net exportation, is at best only a temporary method, since it leaves the payment problem up in the air. It has the additional draw-back of interfering one-sidedly with world trade—especially with that of countries that live by two-way traffic. Yet we are in danger of trying the net export plan, because the domestic alternative raises alarming problems in income distribution. In choosing we have to consider the domestic and foreign bearings simultaneously, possibly with main emphasis on the latter.

Many persons regard surplus disposal and foreign trade as practically identical. Actually, the two things may be scarcely correlated. Surplus disposal involves the clearing of markets that otherwise would stay glutted. Exchanging one thing for another may not do that, as the use of tariffs proves. It has been argued that trade may increase, with good effects on surplus disposal, not only between industrial and agricultural areas, but between countries that are highly industrial. The example usually cited is the pre-war trade between Great Britain and Germany. As to the possibilities of this kind of trade for surplus disposal purposes, it is worth noting in the first place that in between the wars it represented only about 4 percent of Great Britain's retained imports and only about 6 percent of Germany's. Secondly, it encounters resistance from the growing similarity of industrial skills. In the big industrial commodities, such as steel, chemicals, electrical supplies, textiles, optical goods, and motor vehicles, the great industrial nations are neck and neck competitors. In these lines what they can usefully exchange is a diminishing quantity. Essentially, international trade requires an opportunity to exchange goods that are dissimilar, either in kind or quality. The main permanent opportunity lies in the exchange of factory goods for farm products and raw materials. But even this is not surplus *disposal*, which must remain a domestic problem though one with world-wide implications.

Naturally, the United States must consider its own interests; but what are these interests? Obviously, they are political as well

as economic, and the effects of our economic policy on international politics can be profound. In terms of sheer efficiency the industrialization program is sound, because it is the one approach to fuller employment and better use of human and material resources. The only possible objection to it is that it may get us into worse troubles than underemployment and relative inefficiency. About the only worse thing readily conceivable is war. By the net export method, the one that presupposes permanent foreign disposal of the industrial surplus, we might soon incur the risk of war, since the policy would cut into the livelihood of food-deficit industrial nations and at the same time oblige us constantly to watch a constantly increasing foreign investment. The other or domestic method of absorbing the growing industrial surplus would obviate this risk. It would match our consumption with our production, and at the same time would promote harmonious international relations, since it would be quite compatible with lively foreign trade, though this would have to be approximately equal and reciprocal, with exports offset by imports. If we do what is necessary to match our consumption domestically with our increased production, the industrialization program has a green light.

This matching of production with consumption is advisable, moreover, for another compelling reason. The proposal for a further shift in our rural-urban balance has a counterpart in similar recommendations offered for most other countries. For example, the international food conference held at Hot Springs, Va., in May and June of 1943, recommended more industrialization almost everywhere, as a means of increasing farm as well as factory production. Such a movement, the conference said, would lessen the pressure of population on the land, increase the average size of farms, provide jobs for displaced farm folk, make supplies of farm machinery and other things available, and broaden both the rural and the urban market. Obviously, however, rapid industrialization in many lands would carry them toward independence of the older industrial countries, and though the process might be slow it would be certain.

As the new factories rose to productivity, they would doubtless want tariffs against foreign industrial products. Also, the countries in which the factories were situated would presumably have less food to export. In short, the development would change the worldwide rural-urban balance, with notable effects in highly industrialized Europe, which might have to reconsider the virtues of restoring

its domestic agriculture. On the United States the effect would be largely confined to the export trade, since we are not vitally dependent on food imports. Even so, however, the effect would be considerable. Obviously, it would reinforce the argument for greater consumption of our industrial products here. If there is to be a world-wide lowering of the proportion of working populations in agricultural occupations, the movement in the United States must obviously be integrated in some way with the corresponding development abroad. As mentioned, the matter turns essentially on where markets are to be found. Temporarily, of course, the industrialization of new countries may provide a big opportunity for American exports, but if the trade develops with no preparation for a return flow it will lead to serious international trouble both economic and political.

It has been suggested that the indefinite expansion of industry beyond agriculture is a universal means of achieving higher living standards. If that is true, each country individually may develop a program independently, in entire indifference to any and all similar programs elsewhere. Manifestly, however, this is not the case. In fact Louis H. Bean, in a paper<sup>1</sup> which nevertheless maintains that in most places there is need for greatly increased industrialization, expressly points to the exceptions. These are the countries that depend on foreign agriculture. Examples are Great Britain, Germany, Belgium, the Netherlands, and recently even Japan. Such countries, Bean observes, may reduce the proportion of their rural to their urban populations only to the extent that they can draw on the agricultural products of other areas. Obviously, from a world standpoint, the opportunity to expand industry beyond agriculture is not indefinite but limited and highly competitive. Great development of industry in one country may require correspondingly great agricultural specialization elsewhere. If the division of labor breaks down, through the building up of industries in the previously agricultural areas, the originally industrialized countries must think about restoring their own farms.

This problem goes back to the industrial revolution, which expanded means of production but in some countries prevented national self-sufficiency. The outcome was not peace and good will,

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<sup>1</sup> Bean, L. H. *International Industrialization and Per Capita Income*. Page 3. Presented at Conference on Research in Income and Wealth, International Bureau of Economic Research, New York, April 1944.

but fierce international rivalry. Paradoxically, the contestants measured their success by their growing insecurity, as reflected in their industrial exports and food imports. Hopes that economic interdependence among the nations would make them peaceable met rude disappointment. Thus the United Kingdom, with a population grown far beyond the supporting power of its own farms, lived by a compact with *foreign* agriculture. Other countries, less able to guarantee the safety of their supply lines, fell into the same position with more anxiety, and consequently with resort eventually to drastic programs for changing it. Under such conditions the world's total industry could expand not indefinitely, but only in a certain ratio with agriculture, with industrial development in one place balanced and compensated by farm specialization elsewhere. If any country entered the industrial rivalry without a vital need for food imports, it painfully complicated the problem for the others.

Certainly the industrial path, as long as it can be followed, leads upward in living standards. Many countries besides the United States have proved the fact. Familiar examples before the war were the United Kingdom, Belgium, the Netherlands, Switzerland, and Germany. Elsewhere the opposite relative emphasis on agriculture worked out in low standards of living, as in Spain, Poland, Finland, Hungary, Italy, India, and China. These facts would seem to reflect a general law, the effect of which might be counted on to be uniform and invariable. But recent history bears witness to the contrary. In western Europe, between the wars, the tendency in general was not toward relatively greater industrialization, but toward the upbuilding of domestic farms. Why, if prosperity can always be had simply by pushing industry beyond agriculture, did many countries in Europe move in exactly the opposite direction, and strive fanatically toward increased agricultural self-sufficiency? Everyone knows why. These countries had difficulty in selling their factory exports; they could not get enough foreign exchange to buy all they needed in the way of foods and raw materials, and had to set about producing a supply for themselves.

It is particularly difficult to explain modern Germany on the theory that prosperity requires merely an expansion of industry beyond agriculture. In pre-war Germany less than 25 percent of the population was in agriculture. This percentage, though higher than that of either Great Britain or the United States, was small by comparison with that of many countries. Previously, the shift

toward industry had worked favorably. Yet under the Nazis, and even earlier, Germany gave up the attempt to increase the ratio of industry to agriculture, and embarked on a program of encouragement to farming. Announced as part of an attempt to improve agricultural prices, the program soon came to have other more important objects, which turned out to involve the fate of the entire economy.

In the first place the policy was a response to the difficulty the country was having in exporting factory goods, and consequently in paying for imports. In 1933, when the Nazis came to power, German agriculture was in depression, along with agriculture throughout the world. Unlike American agriculture, however, it did not have large surpluses; on the contrary, the country was still importing agricultural products heavily. Farm prices were low because industrial employment was low; the national unemployment total had risen to 7,000,000. It would seem the remedy would have been to encourage industry; instead, the government chose primarily to stimulate agriculture, at the cost of further damage to industry, since the less farm production the country had to import, the less factory production it could hope to export.

Secondly, Germany's program was preparation for war, with the idea that conquest would give command of foreign foodstuffs and raw materials. She sought to establish a better rural-urban balance through territorial expansion, whereby German industries would thereafter have an agricultural foundation that could be considered domestic. The method was vicious—the underlying need comprehensible. In the ensuing peace Germany is likely to have a rural-urban balance struck in the reverse sense—in other words, not through expansion of the accessible agriculture, but through an imposed contraction of top-heavy industry. Here, in this one case, we can see the whole modern problem of the rural-urban balance, which invariably has an international aspect even for countries that have an abundance of farm as well as factory capacity. In the German swing from dreams of expansion to enforced industrial contraction as the basis for its rural-urban balance, we have evidence of a law which is truly universal; namely, the law that industrial development presupposes agricultural supports, either domestic or foreign. This is why, in our own plans for increased industrialization, we should be careful not to disturb the world-wide rural-

urban balance in such a way as to make life impossible for our friends abroad.

How our program might be developed with advantage to ourselves, and at the same time with no disadvantage to other nations, will appear from a consideration of the two possible forms. Suppose as the first and most undesirable possibility, the United States runs its industrial production far above its consumption. Obviously, the surplus may find an outlet abroad, where it will compete with foreign production. As a result, other countries will find the going harder when they try to sell their industrial products. They will have corresponding difficulty in paying for food imports, a matter that could be serious for many of them. They might be forced back yet again on their domestic agriculture, at heavy cost and with great reduction of their living standards. Meantime, the United States, would be turning over part of its output for consumption abroad, with no clear prospect of getting payment, and with the danger of irritating rather than pleasing its foreign customers. Needless to say, moreover, the operation could continue only as long as this country was willing to finance it.

Suppose, on the other hand, this country increases its consumption as well as its production, and gets the two things into balance. It will have the option of consuming the entire increase in the output directly, or of first exchanging part of it for desirable imports. Probably the second course will seem advisable, since it accords with retention of our comparative advantages in different lines of production. But, from the standpoint of so-called surplus disposal, whether we do or do not have more foreign trade will make no great difference. With consumption and production increased simultaneously, the entire necessary increase in the market will be domestic, and other countries will meet with no interference from our program in their own efforts to export factory goods and import foodstuffs and raw materials. Ultimately, in fact, they may find the going easier, since we shall not be using our increased industrial surplus to push our foreign trade aggressively, but merely to pay for what we need.

This sounds utopian, and perhaps it is, because, so far, we have not attentively considered what it would cost to match our consumption with our production domestically. It would cost a substantial change in income distribution. It might be necessary to



have extensive programs for low-income families, wage increases, extensive public works, increased leisure, and greater public encouragement to health services, education, the fine arts, and possibly sport. It would take big operations to make the consumption fully keep pace with the production of industrial commodities. Yet any important differential between the two would promptly check industrial activity, or force the country back upon the undesirable net-export policy. Only a clear sense of how bad that would be can obviate the hazard.

Partly, under the assumed conditions, the desired increase in domestic consumption might come about automatically, through the exchange of an increased quantity of factory production for an unchanged or not proportionately increased quantity of farm production. In other words, it would come about through an increase, expressed in differential prices, in the farmers' share of the national income. Most of the desired growth in the consumption of commodities, however, would have to be within the *industrial* community. This, of course, includes the so-called service trades, the arts, the professions, most governmental activities, and in fact all offshoots and appurtenances of industrial life—in other words, the entire urban system. Under a purely competitive determination of salaries, wages, rents, and profits the rise in the consumption level would be slow; but public action of one sort or another could speed it up.

Without a rational plan for consumption boosting, the further stimulation of industry could have some unhappy consequences such as the farmers particularly would not relish. Specifically it could involve a letting down of the bars to food imports. This would be a bad way to take goods for goods, because it would displace domestic products. With the increased industrial surplus exchanged for a foreign agricultural surplus, only industry would benefit. Agriculture would suffer. Herbert C. Hoover referred to this possibility as long ago as 1920, though naturally without endorsing it. True, he mistook the nature of the danger. After drawing attention to the extent whereby the industries were drawing workers from the farms, in the manner now proposed as a partial solution of the post-war problem, Mr. Hoover said: "If this balance in relative returns is to continue, we face a gradual decrease in our agricultural productivity. If we should develop our

exports of industrial commodities during the next 5 years as rapidly as we have done during the past 5 years, we shall by that time be faced with the necessity to import foodstuffs."<sup>2</sup> This country need not fear that its farms will become *unable* to meet the domestic demand for foodstuffs. But conceivably the farms may lose part of the opportunity to do so. Any import program that actually displaces efficiently produced domestic goods is undesirable, in that it contributes to unemployment. In the absence, however, of firm steps to keep consumption of factory goods in the domestic market, industrial expansion could lead very *quickly* to proposals for increased food importations.

Mark Sullivan referred to the possibility in 1926. He deplored the approach of a stationary farm population as likely to make American manufacturers wish to buy their food from countries that produce it cheaper. In an article entitled "Waning Influence of the Farmer,"<sup>3</sup> he declared: "Limitation of the export market (for agriculture) is not merely accepted but emphasized as a virtue. The policy of nonexport for the farmer and of aggressive export for the manufacturer must be a definite subordination of farming to other industries." Thus Mr. Sullivan anticipated one of the points stressed in this article. In proportion as industry goes deeply into production for export, and looks around for something to import in exchange, it may fix its eyes on foodstuffs and other agricultural products. It may form closer ties with foreign agriculture. In the reverse form, it may demand the policy which agriculture has often demanded for itself; namely, hospitality to imported goods not competitive with its own.

Curiously significant is a contrasting remark by John D. Black, in reference to the structure of world production implied by the resolutions of the (Hot Springs) food conference, which recommended virtually world-wide industrialization. "Such a world food economy," he observes, "would make the United States considerably *more* of a farming country than it is now. . . . But the United States would still remain a great manufacturing Nation, because of its abundance of coal, iron, other metals, and water-power. In fact, her manufacturing would still expand, but not at

<sup>2</sup> Hoover, H. C. Interrelationship of General Industry and Food Production. *Western Doc. Engin. Jour.*, 25: 145-153. 1920.

<sup>3</sup> Sullivan, M. Waning Influence of the Farmer. *World's Work*, 51: 657-661. 1926.

as rapid a rate as her agriculture; and within her manufacturing there would be growth only in those lines in which her natural resources give her an advantage."<sup>4</sup> Here, in these contrasting views, we have the world-wide and also the American rural-urban problem in a nutshell. In which direction we move depends obviously on world developments as well as on our choice and policy. And since disproportionate development in one country in either industry or agriculture frequently presupposes compensating development elsewhere, the total world adjustment as Dr. Black sees it is necessarily to some extent a problem in world politics.

Thus even from the standpoint exclusively of farmers, the world implications govern. Merely unilateral handling of the rural-urban balance is impossible. Farm policy must express more than just a desire for lessened competition and wider markets; it must suggest what can be done with relatively increasing industrial production. In the absence of a satisfactory plan, agriculture's wishes could boomerang. One way has been mentioned; industry might use against agriculture an argument that agriculture has used against industry. It might contend, when its export trade raises the problem of payment, that exports of one kind presuppose willingness to take imports of another kind. Other ways have been indicated more fully, especially the risk that an unripe industrialization program here could produce bad reactions abroad. Hence if we want increased industrialization we must be willing to arrange for increased domestic consumption. This cannot come about automatically because with incomes competitively determined we get an income distribution that inhibits full consumption.

Ultimately, indeed, the matter goes far beyond economics. In both Germany and Japan, for example, we can see a wish to balance expanding industry with more agriculture than they have at home. But with this wish they couple racial and political objectives, in an amalgam of economics with biology. Here is the very soul of aggression. Similar fusions of economics with biology may harass the world again. Possibly they point to the need of a cooperatively determined, world-wide rural-urban balance, within which national self-sufficiency would not be desired, since the relative proportions of industry and agriculture in different countries would be adjusted amicably and reciprocally. This, how-

<sup>4</sup> Black, J. D. *Food Enough*. p. 249.

ever, is a distant goal. As long as it remains unattainable, different countries will try to balance their industries with such agriculture as they have or can reach. Nevertheless, we need not drop the hope of some approximation to a compact; in fact, this is the purport of the Hot Springs resolutions. Meantime, the problem for the United States, in working out its rural-urban balance, is to determine first where the market is to be for increased industrial production and how this market will get buying power, and then to reckon the probable impact of the set-up on farm and factory production elsewhere, so that world cooperation will at least not be hampered. This is not altruism, but prudent self-interest, because for the sake of stable peace the postwar world will need to exclude economic as well as political isolationism.

## NOTES

### MORTGAGE INSURANCE FOR FARM HOUSING\*

THE thesis of this paper is that mortgage insurance and large-scale mortgage banking, though differing in institutional arrangements, are similar in basic functions as both pool risks and provide borrowers with a channel to the central money market. The purpose is to explore some of the considerations involved in proposals frequently made that credit insurance be adopted as an aid to the betterment of rural housing.<sup>1</sup>

#### *The Urban Parallel*

The mutual mortgage insurance system of the Federal Housing Administration in the urban field also includes a residual Federal guaranty. Although lenders under the plan buy mortgage insurance by payment of a premium and thus pool risks, in the event the reserves of the insurance fund are inadequate, the Government bears the residual loss.

Perhaps this combination of insurance with governmental guaranty in the FHA plan tends to cloud the distinction between insurance and guaranty. The phrase "Government insurance" may mean any one of three things:

1. Governmental guaranty of credit.
2. Governmental establishment of the mechanism of an insurance institution in which the risks are mutually shared by the parties to insurance by virtue of a reserve accumulated from premium payments.
3. A combination of both an insurance plan and governmental guaranty.

When the Federal Housing Administration was first established lenders relied more on the governmental guaranty than on the strength of mutual mortgage insurance. More recently there are indications of an increasing faith in the insurance aspects of the program.

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\* Several officials and colleagues of the Department of Agriculture with whom this manuscript has been discussed have offered most helpful comments and criticisms. The author alone is responsible for the views and opinions expressed.

<sup>1</sup> Statement of Secretary of Agriculture Claude R. Wickard before the Subcommittee on Housing and Urban Redevelopment of the Senate Special Committee on Postwar Economic Policy and Planning, January 17, 1945.

As explained in succeeding pages, the alternative to a credit insurance institution is a mortgage banking institution. Both can accomplish the same functions. The Government can add its guaranty to the operations of either or can allow either type of institution to be self-sufficient. In the urban housing field a mutual mortgage insurance program was developed after a limited mortgage banking system already had come into existence. The FHA provided the insurance mechanism and it has done a relatively large volume of business. The Federal Home Loan Bank System, which predated the FHA, was not conceived as a full-fledged mortgage banking system.

The Federal home loan banks were conceived as lenders of last resort but not as fully integrated mortgage banks. In practice they have performed largely a central banking function for their members to carry them over periods of temporary shortages of loan funds. The membership of the Federal Home Loan Bank System is comprised almost entirely of savings and loan associations which for the most part rely on local capital resources and make mortgage loans over a comparatively restricted territory.

As the Federal Home Loan Bank System operates:

1. The risk of the mortgage loans remains almost entirely on the local lending institutions. The local institutions do not shift a significant element of risk elsewhere even if they borrow from the Federal home loan banks because the banks have full recourse on the local lenders.
2. Funds of the central money market are not made fully available to local mortgagors because advances of the Federal home loan banks are limited to 10 years and more recently in practice are limited to a matter of months. The banks do not hold mortgages from their initiation to their maturity. No secondary mortgage market based on a standardization of mortgages is achieved to parallel the FHA plan. Funds of the central money market become a significant influence on local mortgage markets only when local savings and loan associations seek temporary loans to meet needs, pending accumulation of more local savings. Insofar as the Federal Home Loan Bank System is concerned, the central money market is a source of temporary aid to a community rather than a continuous competitive element in the local mortgage market.

Had the Federal Home Loan Bank System been designed so that it could have bought mortgages without recourse on local lenders or could itself have originated loans, it could have pooled the risk of lending by large-scale widespread operations and could have tapped the full resources of the central money market by the sale of consolidated trust notes.

The system of mutual mortgage insurance provided by the Federal Housing Administration as supplemented by the RFC Mortgage Company and the Federal National Mortgage Association may be credited with two principal accomplishments:

1. The risk of lending on the security of home mortgages has been pooled so that lenders have been able to expand such loan business in comparative safety.
2. Funds of the central money market have been made accessible to home buyers through the development of a "secondary market" for standardized home mortgages. Unit banks and mortgage companies are able to sell these standardized insured mortgages on a moment's notice to insurance companies, trust funds, or other financial institutions. The certainty of an outlet is further assured by the fact that the Federal National Mortgage Association, an RFC subsidiary with substantial resources, stands ready as a central banker to buy or sell any volume of mortgages that may be offered or wanted.

#### *Basis for Choice*

The choice between a completely integrated mortgage banking system and mutual mortgage insurance must be made on political and administrative grounds rather than on the basis of any supposed distinction in economic function. Credit insurance on an actuarial basis permits the pooling of risks. Moreover, in combination with standardized mortgages and an ever willing buyer such as the Federal National Mortgage Association, it can tap the central money market. Mortgage banking on a large scale can do no more.

Credit insurance operates through local lenders but in the case of new house loans under the mutual insurance plan of FHA, the insuring agency appraises every separate mortgaged property. A mortgage banking system must have local representation too, but need not deal through local lenders unless it chooses to do so. A

mortgage banking system can accomplish any basic economic function which a mortgage insurance system can achieve. Both are institutional details for accomplishing similar basic purposes. They are unlike in that insurance encourages local lenders while the mortgage banking approach favors the formation of a large-scale direct lender. If the collateral must be examined by the national agency or by an acceptable expert appraisal agency in any event, there may be no outstanding administrative economies in one system as compared with another. An expert appraisal agency might be established by the Government and made available to all lenders on a fee basis. In such an event the two systems would be on a par with respect to the cost of appraisals. If administrative economy is achieved by integration of lending functions, the mortgage banking approach should prove superior. On the other hand local agencies have the advantage of offering convenient local contacts to borrowers and in this particular the insurance plan may have an advantage. Moreover, local lenders already have established organizations and perhaps can include a greater volume of mortgage lending without a perceptible increase in overhead costs.<sup>2</sup>

### *Loans for Farm Housing*

Lenders in the farm-mortgage field making appraisals in the past have given principal consideration to the earning power and prospective sales value of the farm. Evidently, lenders have given little encouragement to new or improved housing because housing has been presumed to contribute only in a minor way to earnings or sales value. Loans for housing have not been readily available except to farmers with little or no other mortgage debt. The Farm Credit Administration has made only a small volume of loans for housing. The Federal land banks are limited to loans not exceeding 50 percent of the value of the land mortgaged and 20 percent of the value of permanent improvements.

But the necessary unity of farm and home virtually precludes the development of an independent credit system for farm housing. Loans for houses must be tied to loans for farming.

Loans can be made available for housing either by broadening

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<sup>2</sup> Casualty insurance companies once sold mortgage insurance to small-scale mortgage bankers doing a loan business in urban territory. Reckless appraisals, and the absence of a Nation-wide appraisal and inspection system were the immediate causes for serious losses. Most companies offering such insurance withdrew from the field about 1926.



the functions of the existing mortgage banking system, or by the establishment of a parallel insured credit system. Either system must regard the farmhouse as secondary collateral and the farm as the prime consideration.

It would seem probable that either the insuring agency or the large-scale mortgage bank would require an appraisal by an expert appraisal agency which, as recently proposed, could be independent of the insurer or mortgage bank. The initial expense of making a loan probably would be similar under either system.

Various technical means have been proposed elsewhere for broadening the functions of the Federal land banks and the Land Bank Commissioner so as to permit a greater volume of loans for housing.<sup>3</sup> Parallel recommendations have been made to broaden some of the loans of the Farm Security Administration to give greater consideration to housing.

If, instead of broadening the functions of existing agencies, a credit insurance program is developed, it is difficult to see how it can avoid some encroachment on existing activities, especially of the Federal land banks. Indeed, if it is intended that such banks become solely farmer-owned in the immediate future, an important consideration is whether or not commercial banks and other lenders should be given the advantage of insurance, especially if given a start with Federal aid. The competitive advantage of mortgage insurance for business-quality loans made by private lenders might jeopardize the volume of business of the Federal land banks. It would be difficult to offer commercial banks insurance only for loans with which farm structures are built, modernized, or repaired as mortgage insurance for farm structures would necessarily cover the entire farm. If credit business of the type now performed by FCA is divided among aggressive competitors, the Federal land banks might be checked in their effort to retire Government capital and become solely farmer-owned.

Credit insurance would make the banks more competitive both by increasing available loan funds and by making possible more attractive terms to borrowers. Loan funds would become more readily available because the banks could sell standardized mortgages on the central money market. Such sales would be especially

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<sup>3</sup> Pending draft of report by working group on Housing of the Interbureau Postwar Planning Committee of the Department of Agriculture.

easy were there an ever ready buyer like the Federal National Mortgage Association standing by to assure a market at all times. Moreover, banks probably would be permitted to carry a larger volume of insured than of uninsured mortgages. Such is the case with FHA insured mortgages.

Credit insurance probably would permit banks in most parts of the country to offer loan terms as attractive to the borrower as those offered by the Federal land banks. This is now possible only in limited areas. The local banker would be warranted in making long-term loans at low rates of interest if the resulting portfolio could be quickly shifted by sale to another holder within a short time. The risk of loss on account of mortgage defaults would be largely eliminated by the insurance arrangement. Hence the bank could afford to lend at moderate rates. With increased lending power and a more attractive loan to sell, the commercial banks could offer the Federal land banks keen competition.

If the Federal land banks are to remain governmental institutions and available primarily for emergency periods, then a competing insurance program may be encouraged as a matter of equity to private lenders. In fact the FCA probably could establish such a system without an increase in its own overhead. But once the credit insurance is available, it will be difficult to confine it to the fields not already served by the Farm Credit Administration. The volume of land bank bonds might be reduced. Bond flotations thus might become both difficult and expensive. The bonds would at least require a governmental guarantee. Any attempt to make the banks self-sufficient and completely farmer-owned might then be defeated.

The case may be a little different for tenant-purchase or farm-enlargement loans such as the Farm Security Administration provides. Such loans are made to borrowers who can afford little or no down payment for facilities purchased. The total volume of loans is limited to congressional appropriations available. The losses on defaulted loans not covered by interest income are borne by the taxpayers. Now it is conceivable that instead of limited appropriations, Congress might prefer to underwrite a larger volume of private loans for such purposes including housing, perhaps in combination with an insurance fund so that local lenders ostensibly, though not in fact, would bear part of the cost

of risk. If rates were high enough to cover average risk, a large-scale lender or insurance agency would bear only the risk of its own mismanagement or poor judgment.

If loans were made at rates including a mortgage insurance premium which are insufficient to cover the average risk, the Government would continue to bear at least part of the risk just as now. Under the guise of lending to a farmer, a local bank would be lending money to the Government, which would be responsible to the bank as an underwriter of loans. The only difference between this and the present system is that the Government could easily become liable on a larger volume of loans unless the volume of insured loans were as limited relative to need as the usual funds appropriated for FSA loans.<sup>4</sup>

The FSA probably could administer a completely integrated loan agency providing supervised credit more efficiently than were responsibility divided with local lenders. This is an inference that should be tested by reference to the experience of life insurance company mortgage departments, Government loan agencies, and by experimentation. It seems apparent, however, that banks cannot service a rehabilitation loan and give proper guidance to the borrowers. If the FSA is to provide the supervision and the banks the money, probably the existing integrated FSA loan system is preferable instead.

### *Conclusion*

The evidence here presented seems to indicate that mortgage insurance and large-scale mortgage banking, though differing in institutional arrangements, are similar in basic functions. Hence, the choice between the two rests primarily on administrative and political considerations rather than on differences in the economic functions performed.

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<sup>4</sup> H. R. 2239, 79th Congress, 1st Session, "Farmers' Home Corporation Act of 1945" proposes a "farm tenant mortgage insurance fund" for insuring mortgages otherwise eligible under the revised Bankhead-Jones Act. The 1-percent premium on 90-percent loans with all collections, administration, and borrower supervision borne by the Corporation would seemingly be insufficient to carry all costs. The Federal Government would in effect guarantee the solvency of the insurance fund. Such loan insurance would be limited to \$100,000,000 per year.

NOTES ON "*THE ECONOMIES OF PUBLIC MEASURES  
TO SUBSIDIZE FOOD CONSUMPTION*," WITH AN  
EXTENSION OF THE ECONOMIC PRINCIPLES OUT-  
LINED TO INDIVIDUAL COMMODITIES

**M**R. SOUTHWORTH in his article<sup>1</sup> explores the uses of food subsidy measures, and the type of programs suited to them. In his economic analysis he deals with "all foods," stating that "in the case of all foods collectively, it seems likely to the author that demand is somewhat inelastic and increasingly so at higher income levels. There are probably individual foods, however, for which the demand is elastic, at least on the part of most families in certain income ranges."

Although our knowledge regarding the market demand for food is limited, these assumptions seem reasonable. One should recognize, however, that the demand for each of the individual foods in the collection may be quite elastic while the combined demand is inelastic because of internal substitution. We know that the composition of the diet varies widely between regions, income groups, national origin, etc., and given the right price conditions, there seems little reason to believe that wide shifts in consumption from one food to another within a major category will not take place over a relatively short time.

The demand for individual fruits and for individual green, yellow and leafy vegetables is no doubt elastic due to the willingness of consumers to make substitutions. Consumers shift, for instance, from bananas to berries or to peaches as a breakfast food for use with cereals or alone; from citrus juice to tomato juice as a breakfast drink; or from beans to cabbage to cauliflower to broccoli or peas, etc., for a green vegetable, as these items come into season and prices decline. The demand for potatoes, rice, and other starchy foods, on the other hand, may be quite inelastic especially in areas where they are respectively considered as staples, because of the lack of substitutes as price increases or the tendency to turn to foods offering more variety as price decreases.

Currently the War Food Administration is committed to the support of most of the chief farm products at not less than 90 percent of parity for at least two years after the war. Under this

<sup>1</sup> THIS JOURNAL, Feb. 1945.

commitment and with limited funds, the Department of Agriculture will at times probably have to consider programs designed to support the price of *individual* commodities as well as all foods as a group. For this reason it is especially important to analyze the effects of the various subsidy measures for individual foods.

In making such an extension to individual commodities one is faced with the difficult task of evaluating programs both for their effect on individual foods and on food as a whole.

In the section on *Effects on Prices, Total Revenue, and Non-Participants' Consumption* Mr. Southworth considers the effects of the subsidy on prices and revenues at the retail level for the market as a whole. In figure 5C he shows the general case where Supply (s) increases in response to an increase in price and concludes that "as in the first figure, however, if non-participants' demand is inelastic, so that their expenditure increases, the increase in revenue will exceed the effective subsidy."

The inference here is plain, if the non-participants' demand is elastic their expenditures will decrease and the increase in revenue will be less than the effective subsidy.<sup>2</sup> The analysis which Mr. Southworth has made therefore deals both with the case where the demand is inelastic for all foods individually and collectively and with the case where the demand for all foods as well as the demand for each of the individual foods is elastic. He does not, however, consider the case where the demand for a major category of foods taken as a group is *inelastic* while the demand for each of the several individual foods may be elastic due to opportunities for internal substitutions.

Programs which subsidize the consumption of low-income consumers depend for farm income effect, upon the response of non-participants to the reduction in supplies available to them. If their demand is inelastic, their expenditures for the major category of foods as a group will increase as well as those of the subsidized low-income consumers and the revenue from the whole market for the entire group of foods will be increased by more than the subsidy. But what is the effect of such programs on the returns from the sale of the individual commodity being subsidized for which the demand is elastic? A reduction in supplies of the subsidized commodity available to non-participants and the resulting increase in

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<sup>2</sup> In using the term "effective subsidy" we will accept Mr. Southworth's definition: "that part of the subsidy that is not diverted to non-food uses."

price to non-participants will decrease the consumption of that commodity by non-participants. Since the price of the subsidized food is now relatively higher than that of the competing foods in the same group, the non-participants will tend to shift from the subsidized food to competing foods and as a result bid up the price for competing foods as well as for the particular food being subsidized. The net result of such a program, therefore, is an increase in revenue from the sale of the subsidized commodity, somewhat less than the amount of the effective subsidy plus an increase in the revenue from competing commodities as well. Programs which subsidize the consumption of low-income consumers tend to increase the income from the entire category of foods and distribute the benefits of the subsidy among producers of all competing foods. Such programs are, therefore, not the most effective as far as the producers of the subsidized commodity are concerned.

A general price subsidy to all consumers on the other hand reduces the price of the subsidized commodities in relation to the prices of competing commodities and tends to cause a shift in consumption away from such competing commodities to the subsidized commodities. With a general price subsidy all consumers will increase their consumption of the subsidized commodities and if their demand is elastic, the increase in revenue to farmers will exceed the subsidy. For the major category of which the subsidized food is a part, total returns will be reduced, however, when the demand for the category as a group is inelastic. This means that a part of the gain in revenue to the producers of the subsidized commodity must come at the expense of producers of competing commodities. This small reduction in revenue from competing commodities should be of minor importance, however. To summarize, a general price subsidy program, when compared with programs which increase the consumption by low-income consumers, has the advantage of concentrating benefits of the subsidy on the subsidized commodities rather than in distributing them to producers of all competing commodities as well as the one being subsidized.

This effectiveness of a general price subsidy in concentrating the benefits of the subsidy on the subsidized commodity is an advantage which should not be overlooked in planning for post-war adjustment programs. Price subsidies increase farm returns by more than the amount expended in the form of the subsidy when

the demand for the commodity is elastic. They are most useful in the case of commodities for which the demand is most elastic and if applied to markets where the demand is most elastic.

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## PROCEDURES OF STUDYING RETURNS FROM CONSERVATION FARMING

TO MAKE a comparison of returns from conservation versus non-conservation farming at least two methods are available. One would be to compare returns from the farm operations of Mr. Smith in 1937 prior to the application of conservation practices with those of Mr. Smith in 1944 after sufficient time had elapsed to put a conservation program into operation and measure its effects. The other would be to compare the methods and returns of Mr. Smith and Mr. Jones in 1944 and obtain thereby a comparison of a conservation and a non-conservation farm in the same year. Several hazards of analysis are characteristic of each type of procedure.

The study of production on an individual farm over a period of time has the advantage that no doubt exists as to the comparability of soil resources, since the farm is identical. The operator also may have been the same over the whole period. However, the weather varies considerably from year to year and in comparing the averages of even two or three years at the beginning and end of a period, it is difficult to determine that this factor has been balanced. For instance, the weather in Iowa was much more favorable to crop growth in the years 1940 to 1943 than from 1936 to 1939. The opposite relationship existed in parts of Maryland and Virginia. Thus, in comparison with the earlier period, a farm in Iowa without any increased use of conservation practices (and without any other practices especially designed to increase yield) might show greatly increased production, while in Virginia the increased use of the best practices might have produced a smaller yield in the latter period.

The effect of price variation on cost and income factors over a ten-year period is likely to overshadow the entire effect of conservation practices one is striving to measure. Thus, if one were comparing incomes and production in the period 1940-42 with those of

1934-36 he should bear in mind that for the United States as a whole, the following changes in prices and income took place:

<i>Item</i>	<i>1940-42, percent of 1934-36</i>
Farm expense rates.....	106
Farm prices of products sold.....	121
Quantity of agricultural production.....	125
Gross farm income.....	151

For individual products, regions, or localities, even greater changes took place during the same period.

A part of this handicap of varying costs and prices may be overcome by expressing major items of cost and production in physical units and applying identical prices. Over a period of time, however, the whole crop pattern may have changed considerably for reasons other than conservation, such as the raising of soybeans and peanuts in wartime or the restriction of wheat acreage in peacetime.

While the operator may have remained the same over the whole period of observation, yet he introduces many changes in his farming system which should be excluded from the effects of a conservation farm plan. He may buy a tractor, begin using hybrid seed corn, or selected strains of small grain, or become more efficient in the feeding and management of livestock. He may have increased the size of his farm as he acquired more capital or he may have decreased the intensity of his operations with approaching retirement or physical disability. Thus while he is still Mr. Smith he may not be the same kind of a farmer in 1944 as in 1937. His income from sources not directly related to conservation may have changed to the same or to a greater degree than from his increased use of conservation practices.

The foregoing handicaps of studying a farm over a period of time to measure the effects of some changed aspects of his business do not mean that this method has no utility for this purpose. On some farms the effects of changed conservation practices may be so striking as to leave no doubt that the result might have been due to vagaries of the weather or to a new number on the seed bag. A recent monthly report cited a McLean County, Illinois, farm on which the adoption of a complete conservation plan, including soil treatment, the use of terraces and contour strip cropping has resulted in yields of 70 bushels of corn per acre on light timber soils which would not produce 30 bushels ten years ago. On the other farms, however, the conservation effects are more nearly of the 5



to 10 percent variety while in the period of establishment, returns may have varied from 10 to 50 percent due to other causes.

The second method of comparison involves the study of so-called "conservation" and "non-conservation" farms in the same year. This method obviates many of the difficulties of measurement described above but introduces others almost as formidable. In the same year prices and climatic factors can be assumed to be non-variable between the two groups if the farms do not extend over too wide an area. However, the character of soil resources may vary widely between adjoining farms. For instance, a group of non-conservation farms in North Carolina had larger incomes than conservation farms in the same area because of having a larger acreage of land adapted to growing tobacco.

Variation in size of farm may have effects on income quite independent of conservation practices. In addition, all of the changes in practices not related to conservation which have been shown to affect income on an individual farm over a period of time may cause an even wider variation in income between farms at one point in time.

The above considerations make it necessary in studying conservation effects in a given land resource area or sub-area to sort the farms for comparability in land resources (proportion of land use capabilities), size of farm, and in many cases by type of farm, or other factor. A definition of a "conservation" farm program in terms of land use and farm practices for the kinds of soil resources found in the area is also necessary. Very few of the farms might grade 100 percent as conservation farms according to this standard. The comparison of returns might be between farms with over 80 percent of conservation practices (weighted according to importance) with farms matched for land use capability and size of farm but with less than 50 percent utilization of conservation practices.

The definition of a conservation farm must involve something more fundamental than cooperation with a soil conservation district. A non-cooperator might have a higher proportion of important conservation practices in effect than a cooperator in the early stages of application of a farm conservation plan. It would be necessary to devise proper weightings for vegetative, mineral, and mechanical treatments as they apply to the soils and land uses in the area. The conservation rating would not reflect the adequacy of present farm plans which are in some stage of application but

rather the degree of current effectiveness of conservation practices already applied. For practices which require two or three years to be effective, this time factor would be taken into account. For instance, lime applied to cropland this year would not receive as much credit as a conservation practice as a similar area limed three years previously with sufficient time elapsed to affect not only the yield of small grain but also the growth of a legume sod crop and a row crop. Likewise, a farm with the first year of a good crop rotation would not merit the same conservation rating as a farm in its fourth year of this rotation even though the crop acreage proportions this year might be the same in the two cases.

This second method of measuring the present effects of practices already established has the advantage of making it possible to get information from more farms per year than by the first method. This would give more assurance that the effects of factors not related to conservation practices were averaged out of the comparison. While the use of this method in successive years on the same farms would strengthen the validity of conclusions, it would enable one to get much quicker results than by the historical method of comparison on the same farm. It is also believed that it would result in more dependable conclusions even though the amount of effort and expense by the two methods were the same.

To think through in greater detail some of the steps in procedure which would be involved, let us make some assumptions for a specified situation which will be illustrative of method only since the kinds of land, kinds and sizes of farms, and the conservation recommendations would need to be worked out locally. A Soil Conservation District in the Corn Belt has about 524 farms with 51 to 79 percent of Classes I, II and III land and with less than 20 percent of Class I land. A little over one-third of the farms in the District fall in this soil resource category. Of these 524 farms, 190 are from 60 to 139 acres in size. Of the 190 farms, 70 have dairy cattle as the dominant enterprise, and on 83 farms the principal source of income is from beef cattle or sheep. The first step would be to determine whether the 70 dairy farms and the 83 beef cattle and sheep farms of 60 to 139 acres in size and with similar soil resources were the most likely groups to study further. One might also consider the 125 beef cattle and sheep farms of more than 220 acres in this same soil resource group as a prospective source of conservation comparisons.

The next step would be to define in general terms what a conser-

vation program means for this combination of resources. This would be done by the district conservationist and work unit leaders with the assistance of zone technicians, soil specialists, district supervisors, and available Research specialists of the Soil Conservation Service or State Experiment Station. Available Research information applicable to individual practices in the conservation of soil and water in the locality should be brought together for the benefit of technicians and others who will help to decide which practices will be considered most important, and the weighting to be given each. The consideration of farm conservation plans already being applied in the locality would also be helpful in this respect.

The local group would note that about two-thirds of the land on farms in this soil resource group was adapted to the growing of harvested crops and that practically all of the cropland was Class II or Class III capability. For purposes of simple illustration let us assume that practically all of the cropland needs lime and phosphate application, contour tillage, strip crop protection, winter cover and a minimum application of manure to support a standard crop rotation of 33 per cent each of row crops including soybeans, small grain, and grass-legumes. Terracing is also indicated, especially if the proportion of row crops exceeds the standard recommendation.

By local determination the following proportions of emphasis might be placed on specified conservation practices in weighting their importance in soil protection:

<i>Conservation practice or land use</i>	<i>Percent</i>
Proper land use	
Permanent cover on land not adopted to crops.....	12
Rotation of crops on cropland.....	35
Percent of sod-legumes .....	20
Percent of row crops.....	15
Cropping practices	
Manure and fertilizer applied. ....	10
Lime applied.....	5
Strip cropping. ....	5
Approved winter cover... ..	5
Contour tillage.....	15
Water disposal	
Terracing.....	6
Drainageways.....	7
	<hr/> 100

These proportions of emphasis and the specific practices included might vary for farms in each soil resource group even within a Soil

Conservation District and surely would vary between different parts of a region or between regions. The attempt would be to identify a limited number of key practices and not to include all conservation practices which might be applied to some part of the farm.

To obtain a conservation rating for individual farms the most important land treatment factors would be considered for a five-year period prior to the year of measurement of results. Triple-A records might be used to bolster the farmer's memory as to acreage of specific crops in the previous five years. The mechanics of a method of applying a rating for individual factors to individual farms are illustrated in Table 1. A maximum attainable score has been set up for all factors except the percentage of grass-legumes in the rotation and the so-called "manure equivalent." For these factors some flexibility is provided by allowing additional credit for performance above the standard to offset to some degree deficiencies in other factors. The schedule of values in Table 1 would be set up locally to fit the characteristics of the soil resource combination to be studied.

This method of calculating conservation ratings with the assumed values shown in Table 1 is applied to four farms which are similar in soil resources, size and type but which vary in the degree and kind of conservation performance experience. Farms 1, 2, and 3 probably would be classified as "conservation farms." Farm No. 2 with a strongly conservational cropping program lacks somewhat in supplemental mechanical practices. Farm No. 3 has used more supplementary mechanical safeguards in water disposal and has a higher percentage of row crops with a slightly weaker vegetative program.

The array of conservation ratings for the farms from which information was obtained might range from 30 to 95. The group called "conservation farms" might consist of those with ratings above 75, while those with ratings below 50 might be called "non-conservation farms." This division might be somewhat arbitrary depending on the distribution of ratings throughout the range.

Having established the classifications of farms, the next step would be to compare the current year's production for the two groups, including acreage and yield per acre of crops, number and production of livestock, farm expenses and income. The keeping of a farm business record book would provide more accurate data than a one-visit survey, but the use of the survey method has several

TABLE 1. ILLUSTRATIVE SCHEDULE OF VALUES FOR CALCULATING CONSERVATION RATING, AND APPLICATION OF RATING TO FOUR FARMS WITH ASSUMED CONSERVATION PERFORMANCE

Land treatment factors in 5-year period previous to year of measurement of results	Conservation performance <sup>1</sup>				Standard percentage points	Calculation of rating	Conservation rating			
	Farm 1	Farm 2	Farm 3	Farm 4			Farm 1	Farm 2	Farm 3	Farm 4
Frequently tilled land of Class IV, V, VI, and VII capabilities, percent of cropland	0	6	6	15	12	Subtract 1 point for each 3 percent of land used for crops which should be in permanent cover	12.0	10.0	10.0	7.0
Rotated grass-legumes, percent of cropland	3	40	25	20	20	Add 1 point for each 2 percent above 33 percent, subtract 1 point for each 2 percent below	20.0	23.5	16.0	13.5
Row crops, percent of cropland	35	25	40	50	15	Subtract 1 point for each 2 percent above 33 percent	15.0	15.0	12.5	6.5
Manure equivalent <sup>2</sup> per acre cropland per year, tons	3.0	4.0	2.5	1.5	10	Add 3 points per ton of manure equivalent <sup>2</sup> above 3 tons per acre, subtract 3 points per ton of manure equivalent below 3 tons per acre	10.0	13.0	8.5	5.5
Lime applied per acre of cropland per year, pounds	250	275	175	125	5	Subtract 1 point for each 50 pounds short of 250 pounds per acre per year	5.0	5.0	3.5	2.5
Cropland with protection of close-growing strips, percent	50	60	40	20	5	5×percent of acres protected by close-growing strips of proper width	2.5	3.0	2.0	1.0
Cropland bare or with insufficient winter cover, percent	10	10	20	30	5	Subtract 1 point for each 10 percent of cropland with bare or insufficient winter cover	4.0	4.0	3.0	2.0
Contour-tilled cropland, percent	100	40	100	0	15	15×percent of acreage tilled on contour	15.0	6.0	15.0	—
Cropland adequately terraced, percent	50	0	100	0	6	6×percent of acreage protected by adequate terraces	3.0	—	6.0	—
Essential drainageways well-maintained, percent	80	50	100	50	7	7×percent adequacy of waterways	5.6	3.5	7.0	3.5
Total					100	Total	92.1	83.0	83.5	41.5

<sup>1</sup> Farm 1—Excellent all around past record.

Farm 2—Excellent cropping record but needing supplemental mechanical practices.

Farm 3—Excellent on water disposal but needing stronger vegetative program.

Farm 4—Weak in all respects.

<sup>2</sup> A ton of manure equivalent considered equal to one ton of manure, 40 pounds of commercial plant nutrients or one-third acre of green cover crops added to soil.

other distinct advantages. It removes the handicap of being able to study only the operations of farmers who keep records. Moreover, a three-visit survey—(1) at the beginning of the year to take inventories and get background material; (2) in the middle of the year to get small grain and hay production, feed consumption, and purchases and sales to date; and (3) at the end of the year for final inventories and completion of the record—offsets most of the advantage in accuracy of the well-kept record book. If the same farms were visited for two or more years it would average two visits per year. This extra visit would also provide much information about farm operations which is necessary for later interpretation of the data. The farm record book usually lacks much of this necessary supplemental information.

The analysis would furnish quantitative differences between groups of farms in the use of conservation practices and help to answer the frequent query "What will it do to my income?" It would help to evaluate more accurately the assumed relative importance of specific conservation practices. It would point up some of the factors associated with the failure to use conservation practices, such as system of tenure, degree of indebtedness, and size of farm. In any event it should furnish locally adapted educational material in helping to hasten the application of conservation practices on farms.

### *Summary*

The hazards of comparing farms at one point in time, with existing wide differences in soil characteristics, past conservation practices, size and type of farm are less than the difficulty of ruling out the effects of climatic and price variation which are inherent in the study of identical farms over a long period of time, provided care is exercised in grouping farms for comparability in the important variable characteristics.

To compare "conservation" and "non-conservation" farms it is necessary to classify them for soil comparability, size, and type of farm.

A conservation standard must be set up in terms of conservation practices and land uses in relation to a specified range of combination of soil resources.

The conservation standard for rating individual farms must consider more than one year's performance for most factors of land treatment.

The measurement of results of differences in use of conservation practices would be the current year's production, expenses and income. Within the area studied climate and price of cost and income factors would be assumed to be non-variable.

While it would be necessary to watch out for the biased influence of factors not related to conservation, this method would permit the study of a larger number of farms than the detailed cost record method, and allow for the effects of a larger proportion of unrelated factors to be averaged out.

The control of several of the variables such as proportions of kinds of soil resources, size and type of farm would reduce the number of farm records needed for significant comparisons and make the results more dependable.

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### FARMERS REGIONAL PURCHASING COOPERATIVES LOOK TO RESEARCH

THE importance of research as a tool in helping to solve technical and business problems is becoming well recognized by many of the larger regional purchasing cooperatives. The growing tendency of many of these associations to manufacture or process a large share of the supplies they handle, their rapid growth, continued strides along technical lines in most branches of our economy, a growing complexity of interrelationships in the business world, and the tendency of competitors to adopt comprehensive research programs, all are factors that have contributed to a growing interest on the part of these cooperatives in the possibilities of research.

For the past few years some regional purchasing associations have maintained laboratories for conducting applied industrial research and for quality testing and control work. Within recent years they also have given increased attention to research along business lines. More recently such developments as (1) the ownership and operation of farms by the Eastern States Farmers' Exchange to conduct a wide variety of research; (2) the granting of \$200,000 by the Cooperative G.L.F. Exchange, Inc., to the School of Nutrition of Cornell University; and (3) the establishment of research departments or the employment of full-time research per-

sonnel by the Cooperative G.L.F. Exchange, Inc., the Missouri Farmers Association of which the M.F.A. Milling Company is an important affiliate, Southern States Cooperative, Inc., and the Pennsylvania Farm Bureau Cooperative Association, Inc., are actions that have focused increased attention on the research activities of purchasing cooperatives.

The growing interest of private business concerns in research also is well known. About a decade ago the Bell Telephone Company employed a staff of 4,000 research workers and established a yearly research budget of \$15,000,000. Similarly, such firms as Du Pont, Standard Oil of New Jersey, General Electric, and General Motors, to mention only a few, have given very significant attention to research. Of definite interest to regional purchasing cooperatives is the fact that private feed companies, fertilizer concerns, oil refineries, and farm machinery manufacturers have developed extensive research programs. The best estimates available indicate that industry employed around 100,000 trained persons and had a yearly expenditure of nearly a half billion dollars annually for research in 1940. It was recently reported that the Office of Scientific Research Development, created by Executive Order to promote war research, when considering obligations still to mature, would spend \$473,000,000 for wartime investigations. Numerous research foundations and private and professional research agencies also have made their influence felt in research activities.

### *Hunches and Personal Opinions Will No Longer Do*

The many problems confronting regional purchasing cooperatives, whether the consequence of greater business maturity, war-time conditions, or the necessity of undertaking adjustments to a peace-time economy will require careful attention if sound policy is to serve as the basis for effective operating practices—practices that keep the wheels of an association turning smoothly. As conditions bring about a shift from a sellers' to a buyers' market the idea that "anything goes" will prove an illusion. This serves to emphasize the desirability of looking to research as a means of helping chart future plans and operations. In fact, the manager of one of the larger farmers regionals has referred to research as a "compass" for policy determination.

The likelihood that economic conditions in post-war years will again require the giving of increased attention to problems of oper-



ating efficiency suggests a growing need for reliance on research findings if stormy seas are to be avoided when charting the future course of regional purchasing cooperatives. As these associations have developed into large-scale business establishments, doing an annual business of millions of dollars and handling a wide variety of products, it becomes increasingly evident that management and directors cannot have at their fingertips information with which to do a competent job in policy determination. To act without availing themselves of information obtainable through research means that such actions are influenced by emotions, hunches, and personal opinions of individuals in policy making positions who, no matter how competent, have biases that should not be trusted in guiding the destinies of rapidly changing and fast growing business establishments. A questioning and critical inquiry into facts that pertain to problems confronting these associations and a recognition that research and capable management go hand-in-hand seem essential if sound operating programs are to be developed for the changing conditions that loom in the years ahead. It is becoming more and more evident that the achievement of basic objectives of economy, service, and quality by regional purchasing cooperatives will become increasingly dependent upon the establishment of an effective research program.

### *What's Ahead?*

Many aspects of the establishment of a research program for regional cooperative purchasing associations, however, are still in a highly formative stage. Differences with respect to such matters as products handled and territory served, together with the relative newness of a research approach to solving business problems, leaves many questions regarding the establishment of a research program still to be answered. Some of these include:

1. Determining the future research needs of purchasing cooperatives.
2. Determining the kinds of research that might best be undertaken by an association itself and the kinds that lend themselves to cooperation with colleges of agriculture, agencies of the Federal Government, other cooperatives, private research agencies, and business concerns.
3. Evaluating such factors as methods of establishing and organizing a research staff, selection of personnel, research procedures

and necessary facilities and arrangements for enabling cooperatives to effectively conduct research.

4. Examining research procedures for the purpose of suggesting desirable techniques.

### *Problems of Research*

To the extent that guesses and spot opinions are relegated to the background in the policy-making decisions of regional purchasing associations, research investigations by competent and experienced men will more and more be used in dealing with a wide variety of operating problems. Some of these problems include the following:

1. What ingredients should be used in manufacturing feed and fertilizer mixtures?

2. What processing methods or techniques contribute to improvement in quality and maintain or increase efficiency in feed and fertilizer manufacture?

3. What strains, sources, and production methods assure patrons of the most satisfactory seed and consequently offer increased opportunities for better crop production?

4. What specifications, standards, and grades do patrons desire and which ones give them the most for their money in the purchase of farm supplies, equipment, and machinery?

5. What developments in purchasing policy will help these associations best to serve patrons? Such matters as possible sources of supply; prices; purchasing methods; storage, inventories, and handling practices; and transportation problems: these are items that need careful consideration in any appraisal of purchasing policies.

6. What methods of distribution will result in most effective operation? Types of retail agencies or outlets best suited to prevailing conditions, the location of these agencies, transportation and delivery practices to put into operation, and the kinds of supplies to handle, all are important aspects to investigate in determining how a purchasing cooperative should distribute its supplies to farmers.

7. What should be the policies of these associations with respect to marketing farm products? This question cannot be effectively answered unless information is available which pertains to such problems as determination of the kinds of products that might be handled effectively, investigation of possibilities in alternative methods and agencies of marketing, and consideration of relative

marketing costs for various agencies and outlets. In addition to undertaking the marketing of farm products some associations have expanded their activities to include various services such as freezer locker operations, lime and paint spreading services, and machinery rental.

8. What changes in general operating policies with respect to such matters as organization structure, financial policies, operating methods, and personnel management would enable associations to improve service to patrons?

9. What specific economic conditions relating to economic trends and forecasts are of particular concern to purchasing associations? This involves measurement of economic forces, determining changes and trends in these forces, and evaluating them as they influence the day-to-day operations of an association.

### *Kinds of Research*

Managers and directors of farmers regional purchasing cooperatives may find it helpful to make two classifications in their consideration of research. These are often referred to as industrial research and business research.

*Industrial research.* Of the problems previously listed, the first four refer specifically to industrial research. They pertain to the more technical aspects that are associated with the commodities, plants, and facilities needed to process various products handled by associations. Closely related to such problems as ingredients, formulas, and new processes for feed and fertilizer manufacturing; and strains, sources, and cultural methods for seed production are problems of determining grades and standards for quality control and testing of various farm supply items.

In general, purchasing regionals have limited their technical investigations to applied research. This has often taken the form of "pilot plant" operations or of trying supplies and equipment under actual farm conditions, either on patrons' farms or on facilities owned or rented by associations. For more basic research, the general practice frequently has been for associations to rely on the findings of established research agencies—often various departments of state colleges of agriculture or the business concerns furnishing them with products handled or used in processing.

As pressing industrial problems confronting purchasing cooperatives have come to the foreground some of these associations have from time to time supported fellowships or made grants to agri-

cultural colleges for the purpose of conducting specific research. Studies to determine the suitability of various vegetable proteins as a replacement for animal proteins during periods of wartime shortages serve as an example. Similarly, studies in the technical aspects of fertilizer manufacturing and in the development of standards for the selection of farm supplies and equipment have received consideration of the research divisions of these agencies because of encouragement and sponsorship by some purchasing cooperatives.

*Business Research.* While not as well established or of as long standing as industrial research, the field of business research has become of increasing importance. It generally has been recognized that laboratory work in the natural sciences along chemical, physical, or biological lines has an important place in the operation of most large business establishments—cooperative or private. However, it was only after the first World War, some 25 years ago, that any significant attention was given to the varied aspects of economic and social problems. In fact, it is only within the past 10 years that very considerable attention has been given to this general type of research by farm supply associations.

During this time, however, these investigations have expanded to include research along such lines as business planning, economic trends, organization structure, purchasing and distribution methods, business location, side-line enterprises, personnel and industrial relations, public relations, and legal considerations.

Experience has demonstrated that those establishments that have given careful consideration to problems of business research have come to recognize it as fully as important as industrial research. Attention has been called to the importance of business research by a leading business executive who recently stated, “. . . Applied science and technology have added immensely to our wealth, and I who have devoted my business life to tools of research, would be among the last to minimize that contribution; but I can think of no aggregate contribution that research in the physical sciences might have made during the last decade to equal that which an understanding and control of economic phenomena would have made.”

For the most part, purchasing cooperatives have considered research as applying to technical aspects of industrial production. Many of these associations, however, are giving increased attention to possibilities in business research and indications are that considerable expansion will occur along these lines. In addition to

their own efforts in business research, some of these cooperatives have developed joint arrangements with other associations for conducting such work. In some instances they also have worked out arrangements for conducting research with such agencies as departments of agricultural economics of land grant colleges, the Cooperative Research and Service Division of the Farm Credit Administration, other Federal agencies, and private research establishments. Experience also has demonstrated that in actual practice many aspects of industrial and business research are closely related.

### *A Word of Caution*

In general, it can be said that to no small degree the ability of farmers regional purchasing cooperatives to "keep young" will be determined by the amount of conscientious effort they give to the formulation of sound research programs. A word of caution, however, seems to be in order. Few people have the temperament, patience, and training to do an objective job of research. This emphasizes the fact that adequately trained and qualified personnel are particularly important in the establishment of a successful research program. It is unlikely that promoting a "bright young chap" up from the ranks will give such a staff the leadership it requires. The National Resources Planning Board recently reported, in a study of business research, that "the standard of research in various companies is directly related to the competency of its professional personnel." It is important that research should be recognized as a questioning process that through careful and critical inquiry to establish facts and principles seeks the correction, verification, and expansion of knowledge.

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## THE STRUCTURE AND FUNCTION OF AGRICULTURAL EXPORT TRADE IN THE EGYPTIAN ECONOMY<sup>1</sup>

THE bulk of Egypt's foreign trade is primarily agricultural raw materials, of which cotton is the most important. Egypt held a comparative advantage in the production of cotton, which was a

<sup>1</sup> Summary of a dissertation submitted in partial satisfaction of the requirements for the Degree of Doctor of Philosophy, University of California, 1944.

source of considerable returns from 1860 to 1921. However, the dependence on cotton as the main exportable crop transmitted to the Egyptian economy the marked instability characterizing world trade in the interwar period. Moreover, with the shift of market demand to cheap cotton varieties and with the expansion of cotton culture in new areas throughout the world, Egyptian long-staple cotton prices dropped to a level which reduced considerably the Egyptian national income.

The demand facing exporters of the largest component of Egyptian cotton "uppers" is inelastic for the latter years of the period under study (interwar period); and since the charges between the local and export markets are usually fixed, it may be inferred that the demand curve facing the Egyptian producer is even more inelastic. This inelastic demand may justify intervention in order to stabilize returns to growers. But the high elasticity of supply in the production of cotton in the new areas outside Egypt limits greatly the possible usefulness of such a policy. In addition, Egypt's exclusive dependence upon the foreign market for the disposition of her cotton crop would make such a policy, even if immediately expedient, disastrous in the long run.

Egypt's present specialization in cotton production must give way to a balanced economic setup if a better standard of living for the Egyptian masses is to be attained. In view of new world developments in nutrition and transportation, Egypt, by virtue of her physical environment and locational advantage, has become more economically suited to the production of several varieties of internationally needed foodstuffs. A shift to a wider range of production would make possible the rise of new processing industries capable of reducing underemployment of the agricultural population.

However, the development of such industries needs capital which, because of low incomes, cannot be raised locally except with extreme hardship to the Egyptian population. There is only one alternative, the resort to foreign credit. Foreign capital will benefit Egypt if she guards against repeating the financial mistakes of the past.

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## THE APPLICATION OF MOTION AND TIME STUDY TECHNIQUES TO CERTAIN AGRICULTURAL ENTERPRISES<sup>1</sup>

IT WAS the purpose of the research reported in this thesis to test the application of motion and time study or work simplification techniques to two agricultural enterprises, hog production and tomato picking. The researcher studied industrial motion and time research techniques, and those techniques which were considered to be applicable were used in the study of these two enterprises. The tomato picking work more nearly approaches the repetitive type of job common in industry than does the work of producing hogs. In fact, the work of these two enterprises represents the two general types of agricultural work, namely: repetitive jobs in which it appears practical to develop and teach the most effective method of doing the work, and the less repetitive work varying from farm to farm in which principles can be taught but details remain to be worked out by the individual farmer.

In the tomato picking study the research method used consisted of the following steps:

1. Detailed study was made of pickers of varying degrees of proficiency. Their methods were described and motion picture analysis was made of the way that they performed the job.

2. Factors contributing to efficiency were isolated and related to output and the percent of the worker's time spent in various elements in the job was determined. It was discovered, for example, that around 70% of the picker's time was spent in moving the fruit from the vine to the hamper and moving the empty hands back to the vine.

3. What appeared to be a most effective means of performing the various steps in the job was described and the resulting method tried out experimentally. It was discovered that if the picker followed four rules, he could take advantage of most of the effective methods used by good pickers.

4. The four rules for effective picking were taught by use of motion pictures and illustrated leaflets.

The procedure followed in studying the hog enterprise differed from the study of the tomato picking in that to produce hogs many

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<sup>1</sup>Summary of a dissertation submitted in partial fulfillment of the requirements for the Degree of Doctor of Philosophy, Purdue University, 1944.

different jobs must be studied over the period of an entire year. Five efficient hog producers were selected for detailed study and their methods were observed and timed through the course of a year. An attempt was made to determine the influence of such factors as field arrangement and cropping system, methods of performing jobs at farrowing, suckling, summer and winter feeding periods on efficiency and accomplishment. Management as well as work methods play an important part in efficiency in hog production. Therefore, it was necessary to take into consideration the quality of the job in order to measure effectiveness of work.

From the more or less descriptive and comparative study made on these farms, it was possible to develop eight general principles for doing the work of producing hogs most effectively. These principles are supported by the differences in accomplishment on farms studied and by the fact that they have been previously tested in industrial work. In contrast to the tomato picking, specific methods of doing individual jobs in connection with hog production were recommended in only a few cases. Alternative methods of feeding, watering, housing, arranging fields, laying out farrowing lots and using various complements of equipment were described and compared in terms of cost, labor requirements, and effectiveness of work. Which method would be most desirable for the farmer is left up to him. The results of this study will be released in bulletins and leaflets as well as in motion pictures.

As one of the purposes of this study was to determine the usefulness of motion and time study techniques in simplifying farm work, the following conclusions are of some importance. It appears that the detailed techniques of motion and time study may be applied directly to such agricultural jobs as tomato harvesting. In such tasks as this the study of details is important. A fraction of a second saved a thousand or more times a day accumulates to a substantial total in such repetitive jobs. Unlike hog production, labor is a major part of the cost of tomato harvest. Hence, it may be practical to increase other items of cost if the amount of labor can be decreased accordingly. Motion economy principles for effective use of the human body apply to the physical work of tomato picking and other hand harvest work in much the same manner as they apply to industrial jobs.

In contrast to tomato picking, specifications for doing the work of the hog enterprise on all farms cannot be developed, except for



certain jobs which are performed repeatedly under similar conditions. In such non-repetitive work as the hog enterprise, more can be accomplished by studying broad processes than by studying the details of body movements. Labor is a small proportion of the cost of pork production, but much of this labor is highly skilled. Therefore, the effectiveness of the work and not the minimizing of time and energy is the proper measure of success. Work simplification studies of such enterprises as this must necessarily include studies of various management practices, as they influence time, labor, costs and accomplishment.

At the onset of this study it was assumed that agricultural and industrial work are sufficiently alike that industrial motion and time study principles could be used in agriculture. Studies of the two enterprises reported above verify this hypothesis. However, the less repetitive the job becomes, the greater the adaptations that must be made of industrial work simplification research techniques. These studies and others which are now in progress at other institutions have merely scratched the surface with respect to the accomplishment which can be made in this area.

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### THE EVAPORATED MILK INDUSTRY UNDER FEDERAL MARKETING AGREEMENTS<sup>1</sup>

THE evaporated milk industry was started on a commercial scale in the United States in 1885, and has developed into a nationwide industry with processing plants in 29 states in 1944. It has become increasingly important to dairy farmers as an outlet for raw milk. Evaporated milk has grown in importance to consumers as a cheap and acceptable form of milk. During the First and Second World Wars the production of evaporated milk increased tremendously to meet war needs and for export. The decline in demand for evaporated milk after the First World War created a problem of adjustment for the industry. A decline in demand after the present war is likely to cause a serious problem for producers and the industry again.

In the period following 1929, the price of raw milk used in making evaporated milk and the price of evaporated milk declined severely.

<sup>1</sup> Summary of a dissertation submitted in partial fulfillment of the requirements for the Degree of Doctor of Philosophy, University of Wisconsin, 1944.

Competition among the manufacturers in the sale of evaporated milk took the form commonly called "cut-throat competition." Secret rebates and concessions to purchasers were often made. Early in 1933, farmers in Wisconsin were threatening to withhold milk from the evaporated milk plants unless higher prices for raw milk were obtained.

These conditions brought a request for government regulation. The firms manufacturing about 95 percent of the evaporated milk in the United States entered into a marketing agreement with the Secretary of Agriculture under the terms of the Agricultural Adjustment Act of 1933. The main objective was to increase returns to producers of raw milk sold to evaporated milk plants. In this agreement there were three major provisions. First, the manufacturers agreed to pay producers of raw milk not less than a specified minimum price. For purposes of determining this minimum price the United States was divided into six sections with a formula based on the prices of butter and cheese, or butter, for each section. Second, the manufacturers agreed not to sell evaporated milk for less than a specified minimum price and for not more than a specified maximum price. Third, the manufacturers agreed to observe certain trade practices designed to eliminate the secret concessions and other abuses which had developed in the industry.

This Agreement No. 7 remained in effect from September 8, 1933 to May 31, 1935, when it was replaced by Agreement No. 60 and License No. 100. The major complaints against Agreement No. 7 were that competition from nonsigners made it impossible for the parties to the agreement to observe its regulations and that the minimum price provision for the finished product was harmful to the firms selling unadvertised evaporated milk. Agreement No. 60 continued most of the regulations of Agreement No. 7 except that a price filing system was substituted for a fixed minimum and maximum resale price provision. License No. 100 contained the same regulatory provisions as Agreement No. 60, but all firms manufacturing evaporated milk were required to observe its provisions. Agreement No. 60 and License No. 100 are still in effect.

The minimum price formulas of both Agreements No. 7 and 60 were too low in four out of the six sections to have any significant influence on the price paid producers for raw milk, since the actual price paid for milk exceeded the minimum price in nearly all instances. In the other two sections the actual price paid was equal to

or slightly above the formula price from 1933 to 1941 and it appears that producers in these two sections benefited somewhat through higher prices from these agreements. Since 1941, the actual price has been considerably above the minimum price in all sections.

In the regulation of the manufacturers' selling prices for evaporated milk the conflict between the manufacturers who sell advertised brands and those who sell unadvertised evaporated milk has created the main problem. The manufacturers selling unadvertised milk complained that the fixing of a minimum price for evaporated milk favored the firms selling advertised brands of evaporated milk since the unadvertised milk was not permitted to compete freely on a price basis. The data on the sales by the firms selling unadvertised milk indicate that the percentage of sales made by them declined somewhat during the period when minimum resale prices for evaporated milk were in effect, but this decline was not halted when price filing was substituted for fixed prices. Under the price filing system, the incentive to price cutting to obtain increased sales is largely removed since the filed price is made known to all manufacturers. Price changes on the part of manufacturers have been made almost simultaneously under the latter agreement and license.

The regulation of trade practices has tended to make sale practices and the channels of distribution more rigid. Both the regulation of trade practices and the price filing system have tended to stabilize the shares of sales obtained by each of the various groups in the industry.

The administration of these agreements by industry committees did not appear to work well and it is suggested that arrangements be made under which administration be placed directly under a governmental agent or authority and the industry committees serve only in an advisory capacity.

Under these Agreements production and consumption of evaporated milk continued the upward trend started shortly after the First World War. The margin between the producer and the consumer became smaller during the period of regulation up to 1941, but this was entirely due to a decline in the margin between the wholesaler and the consumer. The margins taken by the manufacturers actually increased.

Both of these Agreements were based on the theory that producer prices were low because of the competitive practices of the manu-

facturers. It was believed that if competition among manufacturers was regulated, they would pass on the benefits derived from this regulation to producers. This theory is untenable since the producer price is based on the demand for dairy products and the supply of raw milk. If manufacturers of evaporated milk through regulation increase their returns, there is no reason for them to pass this on to producers except as competitive conditions make it necessary. Likewise, if manufacturers incur losses they cannot pass these losses back to producers where the latter have good alternative outlets for their milk.

There may be need for the regulation of producer prices after the war, but if this is the case such regulation should apply directly to producer prices. The Agricultural Marketing Agreement Act provides the basis for such regulation and the experience gained under these marketing agreements should provide helpful information in the framing of new regulation.

BURTON A. BAKER

*University of Wisconsin*

### CONNECTICUT'S RESEARCH IN MILK MARKETING: ANOTHER OPINION

**I** FIND myself in disagreement with my friend and colleague, Leon Steck.

In the preceding issue of *THE JOURNAL*, Mr. Steck reviewed a number of studies made by the University of Connecticut under the general title, "Efficiency of Milk Marketing in Connecticut." He questioned whether these studies made "a constructive and meaningful contribution toward an effective means of bringing about a lower price of milk to consumers, or higher prices to farmers, or toward the establishment of a sound social policy with respect to the milk industry."

Mr. Steck was careful to state that this was his own personal judgment. My own personal judgment is quite different. I believe the Connecticut studies represent the most significant and important research in milk marketing done in recent years either by the State colleges or by the Federal Government. To show why my opinion is different from Mr. Steck's, I should like to comment briefly on each of his three main criticisms.

The first criticism is that many of the proposed adjustments growing out of these studies would require an increase in the size of firms; that savings from such adjustments would be possible only if there were economies of scale; and that it is well known that such economies of scale disappear or become diseconomies when the firm is larger than the optimum size. This is true, of course, but I think it has been recognized fully in the Connecticut studies and in the other studies made under the general supervision of the New England Research Council on Marketing and Food Supply. These studies have clearly indicated certain diseconomies that result from large-scale operations in dairy marketing. For example, they have shown that as a milk receiving plant becomes larger it incurs higher costs for collecting milk from a larger producing area. But it is also shown that diseconomies of this kind are, in many cases, more than offset by real economies in the milk plants. In spite of any theoretical argument about economies and diseconomies of scale, the Connecticut studies have shown beyond doubt that consolidation into larger units would, in many cases, make important net savings.

Second, Mr. Steck feels that some of the proposed reorganization measures would involve too much regimentation of consumers. For example, by compelling them to accept every-other-day delivery of milk instead of daily delivery. I certainly agree with Mr. Steck that consumers should be permitted to obtain such services as they want. Yet I believe a good many consumers would like to get milk at a lower price. We should find some way of giving them an opportunity to have milk delivered every other day if they choose; or to buy milk in stores and carry it home if they choose; and we should try to organize the marketing system in such a way that they may have a good opportunity to make these choices felt. The Connecticut studies have shown several ways of lowering the retail price of milk. These savings should not be forced upon unwilling consumers, but the University has done a real service in pointing out what can be done. Have not consumers (or voters) a right to know this?

Third, Mr. Steck's principal objection to the Connecticut studies seems to be that he fears that the proposed changes in milk marketing would establish a substantial degree of monopoly control. He is quite correct that the assignment of exclusive zones to individual distributors, the establishment of a single central plant, and the granting of exclusive trucking rights in milk collection would be

essentially monopolistic elements. But the milk marketing system is all shot through with monopolistic elements. Not only do a few large distributors and large cooperatives control substantial percentages of the supply in many local milk markets, but also the milk marketing programs of the municipal, State and Federal Governments are used to fix the milk prices and to limit competition. The monopolistic elements already exist. The real problem is whether to eliminate them, or whether to use public controls to get public benefits.

Perhaps Mr. Steck may be right that there are still great opportunities "in the creation of conditions which are favorable to, and which would encourage, price competition among milk distributors." But if we are to study possible ways of reviewing price competition we shall need more than research on the use of paper containers in the place of glass containers. I assume that Mr. Steck would also favor the consideration of opening up milk sheds that are now restricted by arbitrary inspection procedures, of eliminating discriminatory oleomargarine taxes, by abolishing milk price controls, of discontinuing milk marketing agreements and orders, and of similar methods of relaxing or abandoning local, State, and Federal milk controls. However, as long as we have these controls I believe we should give very serious consideration to the possibility of using them to bring about efficient marketing and distribution for the benefit of both the farmer and the consumer.

In conclusion, I feel that the University of Connecticut should be commended for doing a thorough job on a very important question of public policy. I hope this research will be pushed and will be broadened to include a study of possible savings in the marketing and distribution of other commodities. The research people should keep everlastingly at this job. Efficiency in marketing must be one of our main objectives, whether this is accomplished by Government controls, by industry controls, or by the process of competition.

FREDERICK V. WAUGH

*War Food Administration*

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- Boulding, Kenneth E., *The Economics of Peace*. New York: Prentice-Hall, Inc., 1945. Pp. IX, 278. \$3.75.
- Chudson, Walter A., *The Pattern of Corporate Financial Structure*. New York: National Bureau of Economic Research, 1945, Pp. XIV, 148. \$2.00.
- Farnsworth, Helen C. and Timoshenko, V. P., *World Grain Review and Outlook*, 1945. Stanford University: Food Research Institute, 1945. Pp. XI, 319. \$3.00.
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- Lutz, Friedrich A., *Corporate Cash Balances 1914-43*. New York: National Bureau of Economic Research, 1945. Pp. XIV, 132. \$2.00.
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- Soule, George; Efron, David; and Ness, Norman T., *Latin America in the Future World*. New York: Farrar and Rinehart, Inc., 1945. Pp. XIII, 372. \$3.50.

## REVIEWS

*The Farmer and the Rest of Us*, Arthur Moore. Boston: Atlantic-Little, Brown & Co., 1945. Pp. 226, \$2.50.

Two years ago the *Atlantic Monthly* carried an article entitled "Why Farmers Fear the Peace." Soon a second followed. Those of us from the corn belt heard and felt our neighbors speak in these essays. The voice was genuine and the pen was Arthur Moore's—editor of the Bloomington, Illinois *Pantagraph*. These essays showed clearly that Moore was filling a real gap in the serious or intellectual magazine field as an interpreter of the midwest farmer viewpoint. Now Moore has expanded his ideas into a book, written at the insistence of Atlantic—according to an editorial comment on a recent article "Saving the Soil," which consists of excerpts from the present book.

During the last ten years Moore has been seeing great events work through the lives of his farmer friends and readers—first the New Deal farm programs, and then the war, with the need for food, the revolution in nutrition, the politics of price control, subsidies and all the rest. In this book we have an interpretation of these recent events in the context of both history and public policy. Moore is searching for an understanding of the place of farming in modern life and for a new philosophy of farming that makes sense in an industrial age. The result is a most stimulating book—always a courageous report of events, frequently a brilliant analysis of crucial issues.

Moore sees that the future of farming and public policy alike turn on what social scientists in the land grant colleges do. Technology cannot save agriculture in an industrial age; only fearless social scientists and an adequate agrarian philosophy can do this. He says that social scientists in agricultural colleges have not risen to the needs of the times; we have not achieved intellectual leadership in our fields comparable to that of physical scientists. Moore is critical but not hopeless, even though he believes land grant college social scientists have allowed pressure group spokesmen to lead and instruct the farmers in price policy, the relations of farmers and organized labor and similar issues.

Many passages in the book flash a witty or brilliant penetration that can come only from persistent study. I note a few. "Urban liberals who become alarmed over the social structure of corn belt



agriculture forget that there is a difference between democratic conservatives and class-conscious reactionaries" (p. 94). Corn-belt farming is still classless. "No matter what farm leaders may think, they apparently believe the quickest way to increase membership is to promise to knock a couple of 'labor leaders' heads together" (p. 106). The corn belt farmer's "political character is shaped by Marshall silt loam and thirty inches of rain" (p. 129).

Moore concludes that the Farm Bureau fight against the Farm Security Administration was a combination of southern planters' apprehension and corn belt apathy. This observation is shrewd and would undoubtedly be supported by extensive research. In Moore's words, "It was the 'ol' massa' mentality of the South that was frightened and maddened by the FSA and it was allowed to determine the policy of the Farm Bureau's national lobby" (p. 97). However, Moore later observes that political leadership in this country has too short a tether to undertake the collective farming experiments of the FSA.

Altogether this is an important book, not because it is a brilliant finished analysis—which it is not—but because it offers so much fundamental insight into what corn belt farmers do and think. Here are raw materials for agricultural policy.

It does not detract from the value of the book to note that there are many seemingly inconsistent and inconclusive statements in it. The treatment of tenancy is a case in point. He touches many "faces" of tenancy, arriving at no definite conclusion about it—but he does observe dramatically that he has never yet found a tenant really satisfied with tenancy as a way of farming. Moore is searching for comprehensive foundations upon which to judge tenancy; but these grounds have not yet been worked out by the craft of agricultural economists. But it is implicit in Moore's statement that he knows we cannot pass adequate judgment on tenancy merely by analyzing a farm operating statement. In many places in the book, Moore is handicapped by the limitations imposed by the present state of agricultural economics. We simply haven't worked through many of the general problems of concern to the author.

The central theme running through the book, and through his earlier essays in the *Atlantic Monthly* as well, is the search for a national food policy. In one of his *Atlantic Monthly* essays Moore boldly declared that a policy for an industrial agrarianism "would be a farm policy to assure a continuous supply of nutritious food

raised by a relatively few specialists so that the rest of the working force could be in factories." He no longer holds to so simple a view, but rather sets up a fourfold criterion of public policy and a rural philosophy for our times: the strengthening of the family farm; the resolution of group strife, particularly between farmers and laborers; soil conservation through a satisfactory rural life; and adequate nutrition for all. But the core of his thought and hope still centers on the possibilities of finding common ground for all interest groups in policies and programs aimed at providing an adequate and permanent food supply.

This faith is in keeping with the temper of the times; indeed there is so much recent enthusiasm for "food" as a weapon of war and peace that many are surely headed for disillusionment. Anyone who will compare the early war slogan, "Food will win the war and write the peace" with the present state of international negotiations—the San Francisco conference, the veto power on the security council, French and British differences in Syria—can see what is meant. Food or nutritional goals simply cannot be the immediate ends of public policy in a world where interest groups are powerful; it is the difference between an ultimate end and an end in view. The economist's preoccupation with the conditions of equilibrium blind him to the second—the ends in view; but these procedures are also ends. And Mr. Moore senses this, especially in some of his remarks on the recent ill feeling between farmers and organized laborers.

Any reader of this book must surely finish it with a sense of gratitude for an earnest job well done. The great values to me are to be found (1) in the acute sense of awareness which Mr. Moore has of issues and meanings for farm people; and (2) in the challenges to agricultural economists to deal with this general order of problems. Now that Mr. Moore is leaving Bloomington for an editorial position with the *Prairie Farmer*, this paper will take on a deeper significance to students of agricultural economics.

K. H. PARSONS

*University of Wisconsin*

*Food for the World*, Theodore W. Schultz, Editor. Chicago: University of Chicago Press, 1945. Pp. xiv, 353. \$3.75.

This book gathers under one cover essays by a galaxy of stars in the fields of population, human nutrition, international trade and relations, and agricultural economics and policy—Frank G.

Boudreau, John D. Black, Frank W. Notestein, Frank Lorimer, C. A. Elvehjem, L. A. Maynard, Paul R. Cannon, Ancel Keys, Lydia J. Roberts, Karl Brandt, Walter W. Wilcox, Howard R. Tolley, P. Lamartine Yates, Margaret G. Reid, E. W. Gaumnitz, Percy W. Bidwell, Edward S. Mason, Leroy D. Stinebower, Paul H. Appleby, Allan G. B. Fisher, Henry C. Taylor, and Theodore W. Schultz.

The 23 separate papers were presented at the Twentieth Institute of the Norman Wait Harris Foundation, University of Chicago, September 4-8, 1944. They are arranged in six groups: The Food Movement; Population; Nutrition; Food Supplies; International Relations; and Consequences and Policy. Each group is followed by brief but illuminating observations of participants. An introduction is supplied by Dr. Schultz, editor of the volume. Here he poses the questions and problems considered at the conference. As editor and selector of participants, Dr. Schultz deserves the thanks of all who are interested in or directly concerned with the broad problems of improvement of human nutrition throughout the world or within nations, of prospective movements and levels of national and international prices of agricultural products and the supply-demand factors likely to affect them, and of formulation and implementation of national and international agricultural and trading policies. On these large matters no book familiar to the reviewer provides a wider range of thoughtful and thought-provoking analysis, or a more stimulating collection of informed opinion.

The general subject matter of these excellent essays may be stated as follows: Given the broad facts (a) that the nutritional status of populations is much higher in some nations of the world than in others, (b) that nutritional status within any nation is much higher in some classes of the population than in others, and (c) that in some countries agricultural surpluses threatening to levels of farm prices and income seem likely to emerge (or persist) in postwar years while in others low-level consumption of food seems equally in prospect—what can be done by governmental action, national or international, at once to elevate the level of nutrition in unadvantaged nations or groups within nations and to safeguard income levels of producers in surplus areas?

Clear-cut answers to problems of such magnitude could hardly

be expected to emerge. On one matter there appears to be agreement, implied rather than expressed, among all the participants: governmental intervention of some kind and degree is more likely to move in the direction of solution than is the absence of governmental intervention. Beyond this, there appears to be general recognition, if somewhat reluctant in some quarters, that the dominant cause of low nutritional status of populations is lack of income—poverty more than ignorance or preference—and that, accordingly, the most significant (though not the only) measures for improvement of nutritional status must contemplate elevation of incomes.

How such elevation of incomes is to be brought about, however, constitutes an area of disagreement and uncertainty. Nationally, with respect to the United States, several participants seem to favor subsidization of food consumption domestically on the model of the food-stamp plan, the school-lunch program, and the in-plant-feeding program. Others would regard "full employment" (without specifying how to secure it or its continuity) as the more appropriate approach. On the international side, it is generally believed that freeing international trade from the bondage of tariffs and quotas would be desirable in the highest degree, as would industrialization of relatively less-advanced countries implemented either by foreign borrowings or domestic savings of capital; but few participants seem to anticipate rapid and general reduction of trade barriers, or to expect that industrialization is likely to proceed at the desired pace; and some appear to feel that freedom of trade might advantageously be modified in favor of international commodity agreements. Some contemplate with equanimity both the creation of an international two-price or multiple-price system for agricultural products, linking price support and production curtailment in surplus areas with subsidization of consumption in needy areas abroad; others would view the adoption of such policies with scepticism or alarm. No panacea, no magic formula, no blueprint for action is brought forward. What the reader gains, indeed, is a sobering conviction that the task of planned improvement of nutritional status, whether within or between nations, whether approached by specific attention to unadvantaged groups or nations or by general attention to whole populations and world trade, is almost appalling.

ingly difficult. Not the least among the difficulties is that of bringing into being the necessary quantum of international collaboration.

Food and agricultural policy in the United States occupies, quite naturally, a large fraction of the participants' attention. It is refreshing here to find several forthright suggestions that policy based upon the price-parity concept is "tending to price us out of the world market" (Tolley, p. 199), and is even "a liability to agriculture's own interest" (Schultz, p. 201). A neglected alternative involving free movement of market prices combined with payments to farmers is mentioned (Brandt, p. 146; Schultz, p. 201) but not thoroughly explored. It is to be hoped that this alternative will be expounded more fully in the near future.

Opinions of readers will differ regarding the relative excellence of the papers; much will depend upon what one seeks. The reviewer is especially grateful for Notestein's "Population—The Long View"; Maynard's "Knowns and Unknowns about What Constitutes an Adequate Diet"; Brandt's "The Marriage of Nutrition and Agriculture"; Yates' "Food and Income"; Bidwell's "Postwar Trade Policy"; Mason's "The Future of Commodity Agreements"; Stinebower's "Food as a Facet in International Trade"; Schultz's "Food and Agriculture in a Developing Economy"; Brandt's "Basic Elements of an International Food Policy";—and the observations of participants.

Time and again one senses, especially in these "observations," a basic clash of opinion or (perhaps) temperament. The gap is wide between Brandt's "the Good Society's criterion for all policies must remain how much freedom it can combine with the inevitable minimum of regimentation and controls" (p. 340) and Black's "If a congressman had been present at these meetings throughout—an earnest, sincere, well-intentioned congressman—who had had to go back to Washington to draft some legislation after the first of January in order to accomplish and achieve desirable ends, he would have felt he had not received much help" (p. 341). This is, of course, a familiar but none the less important divergence of views on approaches to policy; cold logic may never resolve it. Fortunately, however, the various participants rarely go so far in either direction as Elvehjem's "We probably should starve humans into eating the right foods" (p. 118).

MERRILL K. BENNETT

*Recent Trends in the Demand for American Cotton*, by Cyril O'Donnell. Chicago: University of Chicago Press, 1945. Pp. 53 plus 28 pages of tables, \$1.00.

This booklet is the most complete study of the demand for cotton yet published. It certainly deserves to be read by every thoughtful student of cotton and the cotton industry.

The study is divided into seven chapters, though the last one, Notes on the Technology of Rayon Manufacture, hardly deserves to be considered a chapter.

From Chapter I, Changes in the Total Demand for American Cotton, conclusions are drawn that the outlook for cotton is dark, especially in the matter of regaining foreign markets, that there is a growing inelasticity in the demand for cotton, that the price of cotton is affected less and less by the quantity consumed, and that producers are in the position where total income will decline when the crop size increases. These conclusions are based on highly artificial conditions in both production and price, and do not agree with more general conclusions in Chapter VI.

Chapter II, Trends in the Competition of Other Fibers with Cotton in the Production of Ultimate Consumers Goods, discusses the consumption for some major kinds of cotton goods, gives some general factors affecting consumer choice of different textile materials, such as style, durability, and washability. These are easy to discuss, but difficult to translate into quantitative data. A few cases, such as hosiery, the one used by the author, can be found where style and appearance take cotton out of the running. On the other hand, there are other lines, such as men's shirts, in which cotton has both the desired styling, qualities, and appearance. The point is, that it is impossible to judge the whole field of consumer demands of thousands of uses for cotton by a few cases not especially important in themselves.

Chapter III, Industrial Uses of Cotton, points out the very keen competition of other textile products and paper with cotton, but shows that business conditions, more than anything else, determine volume of demand for, and uses.

The Foreign Market for American Cotton is analyzed and discussed in Chapter IV. Some valuable data are assembled which show the spreading of the market for U. S. cotton to new countries as well as substantial losses of volume of sales to a number of our best customers.

The explanations for these losses and shifts are good, but are far from complete, including Chapter V, *The Effect of Governmental Policy on the Demand for American Cotton*. The effects of the U. S. Government's policies of controlling production and pegging prices on increasing foreign production, and in causing foreign consumers to shift to the new producers, are dealt with more fully in Chapter VI, but nowhere adequately explained.

The outlook for the demand for cotton in the eyes of the author is contingent on many "ifs." If we win the war, which is now assured, and if we win the peace such as expressed in the Atlantic Charter, we can look forward to a demand of 7 million bale export market. The size of the domestic market will be governed by the competition of other fibers, especially synthetics, and by success in raising buying power of low income groups or lowering costs of goods to their level.

The author traces the effects of the Government's efforts to solve the low income problem of the cotton growers, and points out the difficulties of attempts to take such relief out of the market by restricting production and extending above-market-price non-recourse loans to cooperating cotton growers to raise prices. This sort of agricultural policy affects adversely the demand for American cotton in three ways: (1) it invites and encourages foreign production of cotton which has contributed greatly to the loss of our foreign markets, (2) it raises the domestic price of cotton, which causes substitution of synthetic fibers for cotton and (3) it tends to kill much of the demand of low income groups.

Unfortunately the author did not follow through and suggest a full-fledged constructive policy to deal effectively with the cotton problem as regards demand. The need for reduction of our tariff was suggested, and the value of a strong program of research to find new uses for cotton were suggested as important remedies. These are good so far as they go, but the most powerful menace to the overall demand for American cotton is the above-market-price non-recourse loan to farmers.

The most important weaknesses in this study are inadequate treatment and proper evaluation of the nature and influence of the effects of prices and U. S. policies on the demand. The possibilities of lowering costs of cotton production through mechanization and other means as more effective ways for expanding markets for

cotton both at home and abroad need to be more thoroughly developed.

*University of Texas*

A. B. Cox

*Wheat in the World Economy: A Guide to Wheat Studies*, J. S. Davis, Helen M. Gibbs and Elizabeth B. Taylor. Stanford University California: Food Research Institute, 1945. Pp. 222. \$2.00.

*World Grain Review and Outlook, 1945*, Helen C. Farnsworth and V. P. Timoshenko. Stanford University California: Food Research Institute, 1945. Pp. 306. \$3.00.

The first number of the well known series of Wheat Studies appeared in December, 1924. The series was terminated with the publication of the issue, Vol. XX, No. 6 in July, 1944. These studies represent the work of various individuals who have given wheat, in practically all of its economic aspects, both national and international, a very searching analysis, far beyond that which has been applied to any other commodity. They contain a wealth of valuable information including statistical data not compiled or available elsewhere, and analytical procedures. In consequence, the respective numbers have proven to be and will continue to be outstanding references, not only for those primarily interested in wheat but also for those concerned with economic problems connected with other commodities and related problems of public policy.

In order to facilitate the use of the 180 numbers, there has been prepared *A Guide to Wheat Studies*. The arrangement and completeness of this volume are such that it will prove invaluable to the users of Wheat Studies. It will also serve to introduce the series to those who have not previously used it. The volume is divided into three sections. Part I consists of abstracts of all issues except the *Wheat Survey* numbers. Part II presents a complete chronological list of individual numbers; a list of *Special Studies* classified by author; and a similar list classified by type of subject. Part III is a composite index to the contents of every issue of Wheat Studies.

*World Grain Review and Outlook* is the first issue of an entirely new publication of The Food Research Institute, and replaces in part certain features of Wheat Studies, but also containing many



new features and a broader coverage of the world's leading cereal crops. While wheat receives the greater emphasis because of its importance as a human food and as a product of international trade, it is viewed in the perspective of other grains and their uses.

The volume consists of four sections. Part I, "Food Grains in 1943-44" begins with a perspective of important food grain developments of the past fifteen years. The second chapter reviews the outstanding features of the crop year and the nine remaining chapters of this section deal with the supply, trade, utilization and price aspects in the more important countries of the world. Part II "Feed Grains in 1943-44," consisting of four chapters, analyzes the feed grain situation with particular reference to the United States, Canada and Australia. The "Grain Outlook for 1944-45 and Later Years" is the title of Part III. This section which consists of six chapters is concerned with world developments and outlook; the current and future situation in the United States, as regards supplies, requirements, trade and prices; supplies and prospective exports of the main exporting countries; and the prospective requirements including relief needs of European countries. The final chapter in this section is devoted to an analysis of grain policies and world trade; the effect of subsidies, export bounties, import quotas, and other types of trade restrictions; and finally the postwar prospects of world trade. Part IV consists of a statistical appendix prepared by Rosamond H. Pierce and represents a careful compilation of useful data.

This new publication continues the par excellence of Wheat Studies. In view of its greater coverage and complexity, the book is outstanding in the careful delineation and coordination of so much valuable statistical material and in building up a comprehensive and integrated view of the world wide grain situation.

REX W. COX

*University of Minnesota*

*America's Role in the World Economy*, Alvin H. Hansen. New York: W. W. Norton & Company, Inc., 1945. Pp. 197. \$2.50.

The thesis of this book is that "world prosperity and world stability depend in no small measure upon (a) the achievement of full employment within the United States, and (b) the active and wholehearted cooperation of the United States in the formation

and development of international economic organizations designed to insure the workability of a new world order" (p. 8).

Those charged with working out the techniques of our international cooperation for post-World-War-II have had a persistent addiction for the one-at-a-time method. This is not surprising. After the last war the entire peace settlement was pretty much wrapped up in one package and presented to the United States Senate. The results were not of the reassuring kind that would encourage a repeat performance, and there has been considerable feeling that the difficulty after World War I grew out of the fact that the accumulated objections to particular parts of the program were more than enough to defeat the whole thing.

This mistake at least is not being repeated. We have this time a Bretton Woods proposal, a proposal for participation in a relief program (UNRRA), a Food and Agricultural Organization, a political security organization, and others such as those proposed for commercial policy, cartels, and commodity purchases. In addition to these are some like the International Labor Organization which grew out of the last war.

By presenting these one at a time the area of objection can undoubtedly be minimized (although the profound change in the temperament of public opinion is perhaps a more significant advantage). But this technique has the weakness that it leaves the ordinary citizen a bit bewildered about what these special-purpose organizations are supposed to do and how they fit together. In separate chapters on these various proposals Professor Hansen does a much-needed job of explaining and analyzing their functions. And of primary importance—it is pitched at a level which can be readily understood by a nontechnical reader.

The book does not consider explicitly the problem of fitting these proposed institutions together and the related one of how their activities, once the organizations are in operation, are to be coordinated. This is of considerable importance if contradictory policies are to be avoided and jurisdictional conflicts held to a minimum. One is tempted to suggest that this may be one of the more difficult problems in the current program of international cooperation as it is now taking shape, and a few words from Professor Hansen's skillful pen would have been most welcome on this subject.

There are several excellent chapters also on the broader economic problems involved in our international economic cooperation. Those who fear that American businesses are too high-cost to compete for foreign markets will be somewhat reassured by the very clear analysis in chapter XV, "Can the United States Compete in World Markets?" As Professor Hansen states, our problem has been that we have competed too well and sold too much (relative to our ability to buy from abroad).

One critical note might be ventured on the chapters dealing with the Bretton Woods Monetary Fund (about which thus far most of the public criticisms have been centered). Our problem now is to find a practicable area of agreement on this subject which will be broad enough to elicit support from substantially all economic groups. The book may conceivably be written in such a positive tone that the proponents become more enthusiastic and the opponents more skeptical. A somewhat more objective (and even occasionally critical) point of view may be more effective in marshaling public understanding and support (as the reception which the CED report on this subject received from all quarters would indicate) as one which is too anxious to meet categorically every objection.

PAUL W. McCracken

*Minneapolis*

*The Economics of Peace*, Kenneth E. Boulding. New York: Prentice-Hall, Inc., 1945. Pp. 278. \$3.75.

In this book Professor Boulding has undertaken the task—to paraphrase a portion of the preface—of being an "intellectual middleman" who can assist in the distribution of new ideas beyond the circle of professional economists. While there may be considerable disagreement among economists with regard to the particular ideas selected by the author for discussion there can be little doubt that he has performed his task as a middleman with distinction. In fact, by combining these ideas with a particular philosophical and social point of view, the author has done much more than is usually expected of a middleman.

The first third of the book is devoted to a discussion of the physical and financial problems involved in the reconstruction of devastated areas. Of particular interest to agricultural economists are the sections dealing with the means that might be used to

restore trade between the urban and rural portions of devastated areas. Boulding suggests, for example, that the shipment of fertilizers, feedstuffs, and farm equipment to wartorn countries "would not only assist the food situation in the following years and so speed recovery but [by inducing farmers to sell their produce] would actually help the food situation at the time of shipment!"

The latter two-thirds of the book is concerned with the "broad problem of human progress—especially economic progress—viewed not merely as a matter of restoring certain devastated areas to a prewar level of productivity, but as a problem of raising the productivity of mankind as a whole." Among the topics discussed in this section are: (1) the institutional framework within which we might expect the optimum amount of economic progress, (2) the extent to which the Government should alter the distribution of incomes resulting from production under capitalist institutions, (3) the causes of and remedies for unemployment in technically advanced areas, and (4) the restoration of foreign trade. The author also discusses what he terms, "Right Wing Illusions" and "Left Wing Illusions," i.e., arguments which, because of their wide acceptance, may be said to govern the responses of a large portion of the community to social problems. Finally, in the last chapter, entitled, "An Appendix on Politics and Morals," Professor Boulding discusses the problems involved in the elimination of war as well as those involved in the maintenance of a Government responsible to the nation as a whole rather than to special interest groups.

The portion of the book dealing with the causes of and remedies for unemployment is likely to be the subject of considerable controversy and it is unfortunate, in the reviewer's opinion, that the reader is left to his own devices for much of the underlying analysis. Professor Boulding argues, for example, that the stock of capital goods cannot grow forever and is indeed approaching its maximum size in the technically more advanced nations. Why? The owners of capital goods are said to prefer holding money balances to capital goods; every attempt to produce capital goods leads, therefore, to a fall in their price. This appears to the reviewer as a particularly weak reed on which to base the expectation of a modern stationary state. Even in the technically advanced countries there is still a great deal of poverty (as in fact Boulding has

emphasized in the preceding chapters), the elimination of which will require huge amounts of new investment. Nor is there any indication that technological progress has ceased. Moreover, if the true cause of a reduced demand for investment goods were the community's preference for money balance, there is no reason why appropriate monetary and fiscal policies could not be used to remedy this situation.

It is, however, another matter to propose the use of the fiscal powers of the Government to offset all deflationary tendencies whether due to monetary causes or to nonmonetary causes, such as monopolistic practices, unsettled international or political situations. Once the economy had become saturated with liquidity (as would no doubt result from the attempt to use fiscal measures as a cure-all) sporadic inflationary conditions might easily develop.

Nor is it clear that the adjustable tax rates proposed by Professor Boulding would be an appropriate corrective for such an inflationary situation. Small upward adjustments in tax rates may merely serve to reduce the purchases of those primarily dependent on current income to finance their purchases but not of those who are in a position to supplement their incomes by drawing on past accumulations. Tax adjustments (of the kind necessary to stop inflation) may lead, therefore, to an inequitable distribution of product between various groups of income recipients. The situation would be especially complicated if the yield on Government bonds were stabilized—as Professor Boulding suggests (p. 215). Government bond holdings would then be as liquid as money balances.

Yet, for all this, Professor Boulding has written a remarkable book. The point of view from which it is written may be characterized as liberal, equalitarian, and international. The author's style is lively and lucid; his analogies, colorful and instructive. While one might wish that he had chosen to be a "middleman" for a somewhat less extreme position on the causes and remedies for unemployment, it must be admitted that he has succeeded admirably in accomplishing his purpose—that of presenting the major issues that lie before us in clear, understandable language suitable for the general public as well as for the first- and second-year college student.

E. T. WEILER

*Board of Governors  
Federal Reserve System*

*The Theory of Games and Economic Behavior*, John von Neumann and Oskar Morgenstern. Princeton: Princeton University Press, 1944. Pp. ix, 616, index. \$10.00.

Here is a work of utmost importance for all who earnestly seek to remove from the social sciences the atmosphere of vague description and generalization which has grown up about them. Not only have the authors succeeded in demonstrating that the mathematical theory applicable to games of strategy may be a useful (and in certain cases ideal) tool in the study of human behavior in economic and social situations, but, of even greater importance, they have made it unmistakably clear that progress toward a rigorous social science, as in the physical sciences, is apt to come only through a careful accumulation of exact knowledge first about familiar events and situations and later about the more complex and less obvious. They have reversed the method of attack used so frequently by economists and sociologists and instead of trying to build a mathematical system covering a complex segment of human affairs, or, as has sometimes been tried, one covering all man's activities, have been content to explore exactly a few simple and familiar problems. As a consequence of this modesty they have been able to develop a truly mathematical analysis of some simple problems and have pointed the way to exact knowledge of greater ones. Those who study their accomplishments will find them vastly more impressive than the former attempts at using mathematics in economics and sociology.

The development of the theory which this book presents has been in progress for some years. In 1928 von Neumann published the first phase. The present work brings into form the full theory and demonstrates its application. Seeing that the situations existing during games of strategy have many elements common to everyday economic and social situations, von Neumann applies the methods of point-set theory and topology. These methods enable him in Chapter II to set up a formal description of a game. Those familiar only with the usual attempts to use mathematics in economics and sociology which rest largely on the calculus of differential equations will immediately realize the uniqueness and great value of this new approach. The description of the game in exact terms, as outlined in Chapter II, demonstrates a method for analyzing social behavior in situations where each participant is dependent

upon the behavior of the other participants. This accomplished, it is possible to analyze such social factors as competition and cooperation, within, of course, the limits set by the method.

As the study progresses the rational strategy of the participants in various situations is studied and the pattern of behavior analyzed. Perhaps the most interesting conclusion is that in games with more than two persons, coalitions will generally appear. For economists dealing with various aspects of monopoly this is a conclusion of prime significance. The sociologist will also work this as the key to many of his problems. As the authors suggest, perhaps the first practical use of their work will be in the study of situations involving a few participants; for example, economic situations involving strong coalitions of trade unions, consumer cooperatives, cartels, etc. It is futile, however, to attempt prediction concerning the manner in which the theory of games will find its most fruitful use. This may come in the most unexpected manner. The explanation of economic affairs is still on a relatively primitive level compared with the older sciences, i.e., astronomy and physics. The authors foresee the difficulty of developing economics to a comparable level: "The importance of the social phenomena, the wealth and multiplicity of their manifestations, and the complexity of their structure, are at least equal to those in physics. It is therefore to be expected—or feared—that mathematical discoveries of a stature comparable to that of calculus will be needed in order to produce decisive success in this field. . . . *A fortiori* it is unlikely that a mere repetition of the tricks which served us so well in physics will do for the social phenomena too" (page 6).

Something should be said about the difficulty of understanding the theory of games. It is quite difficult to say just what level of mathematical knowledge is required to appreciate this work. Perhaps only an elementary level of training is required; but alone this will hardly suffice. A sympathy for mathematical reasoning will also be required. Whatever the case, an understanding of this work will repay the study. The first chapter, by the way, is an excellent essay on things economic and mathematical as they bear on each other and the progress of science, and can be enjoyed apart from the mathematical phases of the study.

ROBERT W. HARRISON

*Bureau of Agricultural Economics*

*Wages of Agricultural Labor in the United States*, Louis J. Ducoff in consultation with a bureau-wide committee under the project leadership of Carl C. Taylor. Washington: Bureau of Agricultural Economics, 1944. Pp. 193.

This volume is a milestone in the progress of the scientific study of farm labor in this country. Although studies of particular aspects of farm wages have been made in the past, this is the first attempt at a comprehensive survey of the entire field. The present study is also distinguished from earlier works by the volume of hitherto unpublished data drawn upon in reaching conclusions.

Mr. Ducoff and his colleagues begin with a general survey of American agriculture and its labor force, stressing the great concentration of employment indicated by the fact that more than half of the 1939 farm wage bill was paid on less than 5 percent of the nation's farms. A major motif running through the entire volume is the thesis that farm wage relationships to other agricultural factors are obscured if comparisons are made with data for all farms. Wage data must be studied against the background of information regarding "hiring" farms if meaningful deductions are to be made. This emphasis is a notable contribution to clear thinking in this field.

The second section of this study considers the structure of farm wage rates, the importance of wages as an expense in agricultural production, and the changes in wages over time in relation to associated factors. The most striking analysis in this section is that which leads to the conclusion that in 1939 farms having a total value of products in excess of \$4,000 (the group of farms whose owners paid over half of the 1939 farm wage bill) paid wages which "were not anywhere near a level approaching the maximum ability of the farmers to pay wages." The significance of this conclusion for policy purposes is heightened by Glen T. Barton's analysis of ability to pay on selected types of family operated commercial farms which concludes that during a period such as the present conflict "farm wage rates, at least for the type of farm situations under consideration, can rise at a faster rate than farm prices and still be well within the limit of farmers' ability to pay."

This volume's discussion of wage rates in agriculture and industry, and of earnings and welfare of farm wage workers are excellent summaries of the available national and regional data



and emphasize anew the disadvantaged status of farm wage workers when compared with either the non-farm working population or accepted minimum standards of decent living. The penultimate chapter on wartime regulation of farm wages is a useful summary of government activity in an important field which has received relatively little attention.

In the concluding chapter's discussion of policy, the dependence of farm wages and agricultural income upon the health of the whole economy is stressed, and it is clearly implied that only if this nation maintains near full employment after the war can farmers and their employees hope to have satisfactory incomes and living conditions. Mr. Ducoff and his colleagues follow previous Department of Agriculture pronouncements by endorsing the extension of social security legislation to farm workers and the maintenance of an adequate system of placement services. They go further, however, and urge that "Realization of parity objectives for agriculture with other industries should also imply a parity of responsibility to pay and maintain adequate wages and other conditions of employment."

This reader would have liked to see included in this study some discussion of the reliability of available historical farm wage data and more explicit pointing up of the inadequacies which necessarily result from the paucity of statistics on piece rates and piece workers' earnings. As is well known, the current field study of farm wages being conducted by the Department of Agriculture is, in part, designed to remedy certain weaknesses in the structure of available wage data. Despite the omission of explicit discussion of the problems involved in evaluating the basic statistics, however, the present study is a very valuable contribution and should be of great aid to those concerned with farm labor problems at present and in the future.

HARRY SCHWARTZ

*Washington, D. C.*

*Postwar Goals and Economic Reconstruction*, Institute on Postwar Reconstruction, New York University, 1944. Pp. 304. \$3.50, and *Postwar Economic Society*, Institute on Postwar Reconstruction, New York University, 1944. Pp. 305. \$3.50.

These two volumes summarize the proceedings of the second and third series of conferences of the Institute on Postwar Reconstruc-

tion at New York University. The report on the second series of conferences, *Postwar Goals and Economic Reconstruction*, contains fourteen separate papers on widely different topics, including Enterprise in Postwar America by Leon Henderson, What Labor Wants After the War by Boris Sisshkin, How May Business Enterprise Be Expanded After the War by Gardiner C. Means, How Shall We Deal with the Public Debt by Alvin H. Hansen, American Trade and Foreign Investment by Calvin B. Hoover, as well as articles by Leverett S. Lyon, Benjamin Higgins, Mabel Newcomer, Thurman W. Arnold, Frank B. Jewett, Donald H. Davenport, William C. Clark, Eugene Staley, and Abraham D. H. Kaplan.

Agricultural economists will most likely be interested in Leon Henderson's article on enterprise in Postwar America, Alvin H. Hansen's discussion of the public debt, and Calvin B. Hoover's summary on American foreign trade. Mr. Henderson lists thirteen important questions which at the present time are unsolved or unsettled but which will determine the direction and security of enterprise in postwar America. Although he makes no recommendations as to how these problems are to be solved, he does suggest that we adopt a comprehensive overriding national policy so as to know in fairly clear terms whether or not we are to rely on free enterprise.

Mr. Hansen's discussion of his views on the public debt is an excellent summary of the frequently discussed "compensatory fiscal policy" idea which he explains is a "fiscal policy designed to offset the fluctuations that we are familiar with in the business cycle." Mr. Hoover's paper outlines some important problems to be faced in maintaining and expanding American foreign trade. With one or two exceptions, the paper presents a clear picture of the problems involved. The ways in which these problems are to be solved, however, are not so clearly defined. On trade barriers, for instance, he states that "the removal of such barriers, by European Countries in particular, depends first upon the creation and the maintenance of something approaching full employment in the important countries of the world."

The volume reporting on the third series of conferences, *Postwar Economic Society*, contains twenty separate papers on widely different topics, including Perspective in Postwar Planning by Fiorenzo H. LaGuardia, The Place of Cooperatives in Postwar Society,

by Roy F. Bergengren, Winslow Carlton, and Murray D. Lincoln, *Organized Labor in the State* by George Baldanzi, *Education in Postwar America* by Edwin S. Burdell, George E. Outland, and Lewis A. Wilson, *The Medical Profession in Postwar Society* by Dr. Morris Fishbein and Dr. Kingsley Roberts, *Some Problems of Postwar Agriculture* by James G. Patton, and *War and Postwar Population Shifts in the United States* by Warren S. Thompson. Other papers included are by Arnold J. Zurcher, Guy Greer, Mrs. Samuel I. Rosenman, Ira S. Robbins, Col. John N. Andrews, Gilbert H. Montague, Walter P. Hedden, and John E. Slater.

Brevity prohibits a critical analysis or even a brief description of the wide variety of subjects covered in these two volumes. In general, the various papers presented in brief outline the ideas of individual specialists relative to specific postwar problems. Although current events now lead us to suspect that some of the speakers have changed their minds in the few months since the discussions were presented, the two volumes do provide a valuable reference to the thinking of the period (1943-44). The editors, however, in selecting catchy eye-appealing words for the titles of the two books, have misled the prospective reader to some extent. The volumes could be more properly called the *Proceedings of the Second and the Third Series of Conferences of the Institute on Postwar Reconstruction*.

J. NORMAN EFFERSON

*Louisiana State University*

## ACADEMIC FREEDOM\*

**L**IKE all other freedoms, academic freedom is an institutional balance of mutual obligations and rights established between society and the individuals engaged in academic work. Its unwritten code rests upon the principle that neither party can shun anyone of its responsibilities and obligations without thereby reducing its own benefits.

Foremost among the implicit obligations resting upon academic people are intellectual integrity; a high standard of research, i.e., of search for the objective truth; self-critical awareness of the boundaries between well-founded knowledge and personal opinions and predilections; courageous but well considered and tactful expression of views; and a profound respect for the privilege of being entrusted with developing the knowledge, the abilities, and the character of the younger generation.

The most vital right concerns the freedom of the individual to obey exclusively his own conscience as the ultimate judge of his conduct in discharging his professional duties, his research, his teaching, his writing, and his other communications to the public. The academic man must be free from orders by others concerning the method or boundaries of research, the nature and extent of its results, or the means of making such results publicly available.

Academic freedom is as vital to society as the other civil liberties. It alone establishes the spiritual climate in which the human mind can advance man's finite knowledge and comprehension. It alone creates an atmosphere in which the noblest traditions in the search for the truth can be upheld and be handed from generation to generation.

Research and teaching in the social sciences is by nature more concerned with controversial issues than academic work in the natural sciences. These issues are controversial because they touch on the vital contemporary interests and conflicts of our society.

Agricultural economics has passed the stage where the advancement of knowledge was pursued chiefly by research in well defined, special compartments. It has matured sufficiently to emphasize increasingly the need for a synthesis of many lines of specialized research. Agriculture, like other parts of the economy, has become

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\* A statement by the Executive Committee, 1944.

a field of increasing public concern. Public policies and government programs affecting the interests of various groups and individuals in our society emerge from this concern. Consequently, like other social scientists, agricultural economists must deal much more than formerly with problems of controversy, in order to contribute to the development of wise and sound policies.

Occasionally academic freedom is impaired by default: some researchers allow improper respect for the source of the funds for their work to influence the scope of their investigations and findings. Others are so timid as to avoid contributing their share to the truth because they sense that their presentation runs contrary to the more popular assumptions. On the other hand, workers in our field, whether in private or public institutions of research and higher learning or in the service of federal and state governments, have been exposed to pressures from groups and individuals whose interests are involved in the research, teaching, and public utterances in agricultural economics. "Pressure groups" are one of the means by which modern political democracy functions. It is only natural that such groups will now and then make efforts to interfere with the independence of scholarship. Occasionally such pressure becomes truly inimical to intellectual freedom. It tends to impose harmful limits upon intellectual initiative and to circumscribe that liberty of research and expression which is essential to scientific standards and accomplishment. This has appeared in a number of cases in our field.

Violations of the covenant of academic freedom, however, result not alone from the activities of pressure groups. Academic administrators frequently impose less conspicuous but equally harmful limitations as a sort of precaution against the possibility of friction with certain influential factions in the public. Still other efforts toward the same end derive simply from an excess of institutional discipline and intellectual conformity.

The losers in the end have not in all cases—perhaps not even in a majority of cases—been the members of our profession whose academic freedom was temporarily impaired. Even economic pressure groups have a substantial interest in academic freedom. Frequently they turn to academic institutions for unbiased and objective research results which they can use as objective evidence before legislative, administrative, and judicial bodies, or as a basis for their own business decisions. If the integrity of research in any

academic institution, whether privately endowed or publicly supported, is violated, the institution in question loses its authoritative and impartial standing. Unfortunately, any infractions of academic freedom which undermine confidence in the objectivity and integrity of a research institution contribute to the loss of confidence in all institutions.

Therefore, even the intelligently interpreted selfish interest of economic groups requires in the long run the maintenance of full-fledged academic freedom. The same holds for the administrators of academic institutions. While certain curtailments of scholarly independence may temporarily yield some trivial conveniences, they are always extremely costly in the longer run. The best research minds, as a result of this loss of independence, drift away from the coercive institution, depleting its faculty and impairing its reputation. Enlightened administrators have never failed to view this inevitable situation with considerable respect.

The American Farm Economic Association takes cognizance of these dangers which become more acute in the emotional strain of these days of great national emergency. It solemnly reaffirms its belief in the need for protecting all institutions of research and higher learning, as well as the academic teachers and research workers, from any curtailment of their academic freedom. The Association refuses to function as another pressure group to champion the particular academic interest of its members, but appeals to them all individually to exercise constant vigilance against any violation of the unwritten covenant of academic freedom from either side. Its members should be guided by a high sense of responsibility as well as by unflinching civil courage whenever they observe or face situations of subtle or open coercion. Whenever a scholar in our vocation successfully upholds the dignity and the vital prerogative of freedom, all will share the benefits. Never must we compromise on the principles of this eternal heritage.

## NEWS NOTES

The American Economic Association is undertaking an extensive study of the undergraduate teaching of economics and the training of economists through a considerable group of committees. The subcommittee on the study of economics in relation to education in agriculture is composed of M. R. Benedict, F. F. Hill, H. B. Price, T. W. Schultz and W. C. Waite.

M. A. Abrahamsen, Professor of Marketing, who has been on leave for six months with the Farm Credit Administration, returned to his duties at the University of West Virginia July 1.

J. B. Andrews who has been administrative assistant and associate professor of Agricultural Extension at the University of Illinois has been appointed professor of agricultural economics extension. Professor Andrews is one of the pioneers in the farm management work at Illinois, beginning in the cost accounting work in the Department of Animal Husbandry in 1912. He will manage a group of farms which belong to the University and also have general administrative charge of the Farm Bureau Management Service project.

W. W. Armentrout, Head of the Department of Agricultural Economics at the University of West Virginia, who has been on leave serving with UNRRA in Europe, will resume his duties at the University September 1.

M. K. Bennett, Executive Director of the Food Research Institute, Stanford, has resigned from his position as Chief, Food Allocations Division, Office of Food Programs, Foreign Economic Administration, as of March 31, 1945. He has returned to his duties at Stanford, but continues in the capacity of Consultant to the Office of Food Programs.

Reed H. Bradford, Associate Rural Sociologist, who has been on military leave for two years, has returned to his duties in the college and Agricultural Experiment Station, West Virginia.

R. P. Callaway, who has been with the War Food Administration for the past three years, has been appointed Associate Professor and Marketing Specialist in the Department of Agricultural Economics, Farm Management and Marketing of the University of Maryland.

F. D. Cornell, Jr., Acting Head of the Department of Agricultural Economics, has been appointed Assistant Director of Agricultural Experiment Station, West Virginia.

Phil S. Eckert, Agricultural Economist of the Federal Reserve Bank of Cleveland, has accepted a position as Professor of Agricultural Economics at Montana State College effective July 1, 1945.

J. Rudolph Ferrell, recently with the Division of Farm Management and Costs, B.A.E., has transferred to the Agricultural Adjustment Agency, with headquarters at Washington, D. C.

Paul L. Fletcher has joined the Economics Section staff of the Extension Service of the United States Department of Agriculture as Senior Extension Economist, in charge of Livestock, Wool and Grain Marketing.

Raul Garcia, of the University of Cordoba, Argentina, has been a visiting scholar at the University of Minnesota during the past year. During the coming year, he will visit a number of institutions throughout the United States.

Trimble R. Hedges, who is at present on military leave serving in the Navy, has been appointed Head of the Department of Rural Economics and Sociology in the University of Arkansas College of Agriculture. Dr. Hedges succeeds Dr. C. O. Brannen who has been Head of the Department for the past 20 years and who now is Director of the University Bureau of Research.

T. G. Hornung, formerly with the Livestock and Meats Branch of the Office of Marketing Services, has recently joined the staff of the Economics Section, Federal Extension Service. Mr. Hornung's new duties will have to do with the economic aspects of the Farm Labor Program. He will work with state economists and the personnel of the Economics Section on problems related to labor utilization.

Homer L'Hote, who has been an instructor in the Department of Agricultural Economics and recently an Assistant to the Director of the Experiment Station, University of Missouri, has accepted an appointment in the Rural Electrification Administration as economist and assistant to the Director of Research. He will devote his time to the conduct of research among farmer groups related to the establishment of additional electrical service among farmers.

Percy M. Lowe will return to his position as Instructor in Agricultural Economics at the University of Minnesota on September 15 after a year's leave of absence. During his leave Mr. Lowe has assisted in the rehabilitation of blinded war veterans at Avon, Connecticut.

Carl C. Malone has been acting as regional farm management specialist for the North Central States for the Extension Service of the United States Department of Agriculture, taking the place of Luke M. Schruben, now serving in the Navy. He has been farm management specialist at Iowa State College for many years, and will return there shortly.

Stanley F. Morse, agricultural consultant since 1916 with private practice in the United States, Latin America and Europe, and previously State Director of Agricultural Extension and Professor of Agriculture at the University of Arizona, is Chief of the American Food Mission, U. S. Foreign Economic Administration, to French North Africa. Mr. Morse also has been serving as Chief of the Food Divisions of the North African Joint (Anglo-American) Economic Mission.

Alvah L. Perry, Assistant Agricultural Economist in the Maine Agri-



cultural Experiment Station, has resigned to take up potato farming, Aroostook County.

Wade Rice, who has been Extension Poultry Husbandman at the University of Maryland, has been appointed as Poultry Products Marketing Specialist in the Department of Agricultural Economics, Farm Management and Marketing. He will be in charge of all Maryland Fresh Egg Law work and such activities as are specifically related to the grading, standardization and marketing of poultry products.

C. E. Stockdale, formerly with the AAA has been appointed Associate Agricultural Economist in the Agricultural Experiment Station, West Virginia.

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## THE PRICE POLICY FOR AGRICULTURE CONTEST

WHEN the Executive Committee of the Association met in Washington during January, 1945, we were advised that a public-spirited citizen desired to make \$12,500 available to the Association to be used as prizes in a contest to be sponsored by the Association on the general topic of a price policy for agriculture. This represented a new departure in our activities. The Executive Committee accepted the offer and the following contract was executed between the association and the donor:

### AGREEMENT

The Executive Committee of the American Farm Economic Association hereby accepts in the name of the Association, the sum of \$12,500.00 from W. H. Jasspon.

The American Farm Economic Association allots, not to exceed \$2,500.00 toward the cost of administering this project.

It is mutually understood that this sum of \$12,500.00 is to be used in conducting a contest for the best papers on the subject "Farm Price Policies." This contest is to be sponsored by the Association, and conducted under the control of its Executive Committee.

The conditions governing the holding of the contest are contained in the attached memorandum which is hereby made a part of this agreement.

Signed the 3rd day of February 1945.

The American Farm Economic Association  
per L. J. NORTON, *President*  
W. H. JASSPON, *Donor*

The topic as stated in the folder announcing the contest was as follows:

"A Price Policy for Agriculture, Consistent with Economic Progress, That Will Promote Adequate and More Stable Income from Farming."

The awards were set up as follows: first \$5,000; second \$2,500; third \$1,250; and 15 additional awards of \$250 each. The rules provided that papers should not exceed 3,000 words, should be submitted to the Secretary by August 1, and that not more than two of the \$250 awards should go to residents of any one state.

The Executive Committee agreed on the following panel of judges, all of whom graciously accepted.

Chester C. Davis, President, Federal Reserve Bank, St. Louis, Missouri, Chairman

W. W. Wymack, Editor, The Register and Tribune, Des Moines, Iowa

Henry C. Taylor, Managing Director, The Farm Foundation, Chicago, Illinois

W. I. Myers, Dean, College of Agriculture, Cornell University, Ithaca, New York

Alvin H. Hansen, Littauer Professor of Political Economy, Harvard University, Cambridge, Massachusetts

A folder describing the contest and containing the rules was prepared and sent to all members of the association and others on request. Several thousand copies were distributed. Announcement was also made through the press and farm papers. Many of the latter carried announcements and the writer wishes to thank the various editors who gave publicity to the contest. An announcement was also carried in our Journal and in several other journals of associations in the social science field. No money was expended for advertising.

In all 317 papers were received and distributed as follows:

<i>State</i>	<i>No.</i>	<i>State</i>	<i>No.</i>
Alabama	3	Kansas	13
Arizona	1	Kentucky	7
Arkansas	3	Louisiana	2
California	14	Maine	1
Colorado	8	Maryland	7
Connecticut	3	Missouri	9
District of Columbia	14	Massachusetts	6
Florida	1	Michigan	10
Georgia	3	Minnesota	21
Idaho	2	Montana	8
Illinois	22	Nebraska	2
Indiana	18	New Jersey	2
Iowa	14	New Mexico	1

<i>State</i>	<i>No.</i>	<i>State</i>	<i>No.</i>
New York	7	Vermont	1
North Carolina	2	Virginia	16
North Dakota	6	Washington	4
Ohio	12	Wisconsin	22
Oklahoma	3	Wyoming	2
Oregon	5	Puerto Rico	1
Pennsylvania	7	Canada	1
South Dakota	7	Army (No residence)	2
Tennessee	10		—
Texas	9		317
Utah	1		

As received by the Secretary the papers were coded, numerically in order of receipt and by states. All people who subsequently handled the papers worked from these numbers and did not know who wrote the individual papers.

The Secretary and this writer reviewed all of the papers for the judges and ranked them into four groups based on the following standards: (1) The inclusion of a definitely developed plan; (2) the general quality of the analysis. All papers were turned over to the judges, who met at Madison, Wisconsin on August 15, 16, and 17. The awards were announced at a dinner in Washington, D. C. on September 11, at which the Secretary of Agriculture, Mr. Clinton P. Anderson, presided. The winning papers are published in this volume. It is to be hoped that their publication will stimulate thinking, discussion, and further writing on this important topic, and that among them will be found ideas which may be useful to legislative and administrative authorities in developing programs which will carry on the objectives set out in the title of the contest.

The papers logically fall into two groups, those written by farmers and other laymen; those written by professional economists. Among the former there was a strong accent in favor of fixed prices, in many cases related to "cost of production." No definite plans were proposed for accomplishing this. This desire of many farmers for fixed prices may be considered as a wish for security against the effects of fluctuating prices and depressions accompanied by severe price declines.

The professional group of papers included a wide variety of proposals. In general the present parity formula was considered to be outmoded and the entire concept of parity was held to be unworkable by a number. A wide variety of suggestions were made

for revising the parity formula. In general these provided for the use of some more recent base so that individual price parities would more nearly reflect the basic changes which have affected the relative position of the prices of individual commodities since the present parity base period, 1910-1914. Very little emphasis was placed on production control.

Among the prize winning papers there was a strong accent on the desirability of general measures that would maintain a vigorous and prosperous general economy, greater freedom in prices of individual commodities than is possible under existing price support legislation, some type of "forward pricing" in order to guide production, and government supplementary payments to maintain total returns from individual products or total overall farm income. In some papers the suggestion was made that these payments be tied to some overall measure of economic activity or income.

The general trend of thought was toward freer markets accompanied by measures to support some minimum level of farm income. Although not specifically developed in all of the papers the justifications for this procedure are (1) it would permit the price structure to perform its normal functions of guiding production and distribution of commodities and (2) it would provide a minimum level of income to farmers in depression periods for continuing production of needed goods (foods and fibers) at a time when the industrial sector of the economy is shrinking. If properly worked out, assurance of such minimum income would tend to satisfy the desire for security against extreme price (and income) declines reflected in many of the papers submitted by farmers.

The writer wishes to express his appreciation to all contributors to the contest, to the judges, to officials of the University of Wisconsin who helped to make pleasant the judges' visit to Madison, to the other officers and members of the Association who rendered assistance, and finally to Mr. W. H. Jasspon of Memphis, Tennessee and Washington, D. C. whose contribution of funds and interest made the contest possible.

L. J. NORTON, *President*

## STATEMENT BY CHAIRMAN OF THE AWARD JUDGES

THE JUDGES accepted the invitation of the president of the American Farm Economic Association to judge this contest with full recognition of the difficulty of the task, and the responsibility involved in selecting the best papers written on such a many-sided subject as "a price policy for agriculture." The papers we selected are published in this volume.

The names of the authors of the prizewinning papers, with their states of residence and business or professional connections, are as follows:

	<i>Name</i>	<i>State of Residence</i>	<i>Connection</i>
First Paper (\$5,000 award)	William H. Nicholls	Illinois	Dept. of Economics University of Chicago Chicago, Illinois
Second Paper (\$2,500 award)	D. Gale Johnson	Illinois	Dept. of Economics University of Chicago Chicago, Illinois
Third Paper (\$1,250 award)	Frederick V. Waugh	Virginia	Office of War Mobilization and Recon- version Washington, D. C.
(\$250 awards)	George W. Barr	Arizona	Dept. of Economics University of Arizona Tucson, Arizona
	Merrill K. Bennett	California	Food Research Institute Stanford University Palo Alto, California
	Gordon P. Boals	District of Columbia	Office of Foreign Agricultural Relations U. S. Dept. of Agriculture
	Karl Brandt	California	Food Research Institute Stanford University Palo Alto, California
	Willard W. Cochrane	Virginia	Bureau of Agricultural Economics U. S. Dept. of Agriculture
	R. J. Eggert	Illinois	American Meat Institute Chicago, Illinois
	Paul A. Eke	Idaho	Dept. of Agricultural Economics University of Idaho Moscow, Idaho
	Carl C. Farrington	Maryland	Production & Marketing Administration U. S. Department of Agriculture
	Rudolph K. Froker	Wisconsin	Dept. of Agricultural Economics University of Wisconsin Madison, Wisconsin
	Charles D. Hyson	Massachusetts	Harvard University Cambridge, Massachusetts
	Adlowe L. Larson	Oklahoma	Dept. of Agricultural Economics Oklahoma Agr. & Mechanical College Stillwater, Oklahoma
	James G. Maddox	Virginia	Bureau of Agricultural Economics U. S. Dept. of Agriculture
	Rainer Schickele	District of Columbia	Bureau of Agricultural Economics U. S. Dept. of Agriculture
	Geoffrey Shepherd	Iowa	Dept. of Agricultural Economics Iowa State College Ames, Iowa
	Lawrence H. Simerl	Illinois	Illinois Agricultural Association Chicago, Illinois

Our present agricultural price policy has developed from a considerable period of evolution in federal law and administrative machinery. During the war the emphasis shifted from production control with support to prices and parity payments to producers of

certain basic products, to the active use of guaranteed minimum support prices to encourage and expand production of a wide variety of agricultural products. Higher price levels for farm products developed during the war as the result of increased demands and the government war-time fiscal policies. Congress has authorized the support of the prices of a number of commodities at 90% of parity for a two-year period after the January 1 following official proclamation of the termination of hostilities. Moreover, the basic prewar legislation still remains on the statute books.

A great deal of experience has been gained out of this activity in connection with supporting price. Some programs have worked out as expected and hoped; others have been disappointing. The evolutionary process will probably continue; changing conditions and past experience will bring about needed revisions in existing legislation in the search for workable arrangements which will protect farmers against extreme vicissitudes of price and income fluctuations but which will leave prices and markets for farm products reasonably free to clear large-volume production and to encourage production shifts to meet changing demand conditions.

The present attitude of the nation favors producing abundantly in all segments of the economy in order to achieve and hold a high level of national income and a high living standard. These objects require high level production both in industry and in agriculture. In dealing with postwar farm price policies the contestants generally recognized this as a basic fact, and proposed methods to encourage high level production of agricultural products and the widespread distribution and consumption of large quantities of farm commodities. Along with this goal the prize winners bracketed another—the necessity to maintain parity of income between agricultural and non-agricultural workers, and various plans and devices to accomplish this were proposed.

On behalf of the committee of judges it should be stated that our function was to rate the 300-odd papers on what the committee considered their relative merits as essays of 3,000 words or less on the assigned subject. The sponsors of the contest felt that, if this were done, the top group of papers would, in the aggregate, offer useful suggestions and guides which might be studied by those who are responsible for formulating and carrying out agricultural price and income policies in the postwar period.

CHESTER C. DAVIS, *Chairman Award Judges*

*The First Award Paper*

A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING

WILLIAM H. NICHOLLS  
*University of Chicago*

*A. The Necessity for an Integrated Agricultural Policy*

EXISTING agricultural price policy is the heritage of the sectional isolationism of the 1930's. "Overabundance," not scarcity, was the specter which haunted American agriculture, labor and industry alike. And each group, aided and abetted by government, vainly strove to live unto itself in an inextricably interdependent economy. Even under the unifying pressure of the war, this depression-born restrictionism yielded but slowly to the insatiable demands of Mars. True, a glorious record of unprecedented production ultimately resulted. But, even then, the running battle between agriculture and labor, while inflation control hung in the balance, re-emphasized the hazards of the wholesale transfer of price-making into the political arena. Clearly, if we are to evolve a more stable and productive postwar economy, we must profit by these recent experiences.

The general welfare is much more than the sum total of special interests. Hence, if agricultural (or labor or industrial) policy is to be consistent with economic progress, it must be an integral part of a sound national economic policy, based upon forward-looking political and economic cooperation. The essential objectives of such a national economic policy are:

- (1) greater economic stability;
- (2) an expanding aggregate *real* income; and
- (3) a rising minimum scale of family living.

No sector of our economy, least of all agriculture, can fail to have a primary interest in the realization of these three goals. Yet they cannot be attained by any one economic group in isolation. This paper explores the means by which agriculture can promote its own stability, aggregate real income and family welfare, consistent with concomitant progress toward these goals by other parts of the economy.



*B. Toward Greater Economic Stability**Price and Income Instability: The Problem*

Industrial capitalism is apparently peculiarly subject to progress by fits and starts, reflected in wide fluctuations in the general price level, employment and national income. Agriculture is particularly vulnerable in such an economy, because (1) it maintains production even in the face of ruinously low prices; (2) raw material prices are subject to the greatest amplitude of change; and (3) changes in agricultural income expectations are shortly reflected in land values. Agriculture's fears of a postwar deflation have already found expression in Federal legislation directing government support of agricultural prices at 90-92½ percent of parity for 2-3 years after the war's end. A feeling of economic insecurity also probably accounts, in part, for agriculture's insistence on "parity prices" during the war, even though parity embodied in its very definition the potentialities of an upward price spiral.

For proper perspective, however, we must recognize that the ghosts of deflation are likewise real to other economic groups. Labor's drive for maintenance of membership, broader unemployment benefits, barriers to technological progress and its own inflationary counterpart of "parity"—wartime wages tied to the cost of living—reflect its boom-or-bust psychology. Industry too clings to its old maxim, "charge what the traffic will bear," partly as a means of preparing for the "rainy day" of deflation, thereby hastening its coming. Thus, the most important single factor preventing the sublimation of the shortrun special advantages of all our major economic groups to the longrun common interest may be the insecurity of our unstable market economy. During the postwar period, we must give increasing attention to the optimum allocation of our human and material resources (Section C). But, so long as deflations recur, the waste of economic resources is too staggering for popular concern about such niceties as their optimum allocation, most alternative uses having already disappeared.

*Price and Income Instability: Suggested Solutions*

Important as it is to agriculture, price and income stability is fundamentally the problem of our entire national economy. Attempts at solution must, therefore, be general in scope, at least

in the first instance. Agricultural price policy can at best do no more than supplement, while avoiding conflict with, general monetary-fiscal policy.

If the objectives of economic progress and social welfare are to be realized, the Federal government must underwrite a high level of employment as continuing national policy. It must stand ready to use its taxing, borrowing and spending powers to keep the economy on an even keel, with prevention of general inflation and deflation as a major goal. Agriculture, in its own self-interest, should lend its support now to such a general system of compensatory fiscal policy—including the maintenance of necessary inflation controls during the postwar transition—as its first objective. State and local agricultural leaders should also prepare careful blueprints for rural public works for the double purpose of promoting the social welfare of agriculture (Section D) and stimulation of economic activity when unemployment threatens. Schools, hospitals, highways, river-valley development, soil conservation, reforestation, rural electrification and rural housing—in all these agriculture has a special interest and peculiar need.

Supplementary agricultural price policy should by all means avoid the mistakes of the 1930's: (1) curtailment of food and fiber marketings when consumer needs (if not effective demand) continue unchanged; and (2) price-fixing devices which prevent clearing the market at prices which the nation's consumers can better afford to pay. As a counter-cyclical device, Congress should establish an extensive system of compensatory price payments to farmers, to take effect if an index of employment falls below some specified level. The essence of this plan is (1) that market prices would be left to clear whatever supplies are put on the market (subject to an acceptable storage program<sup>1</sup>), so that consumer prices of foods and fibers would likewise fall; and (2) that agricultural purchasing power would be maintained by payments (for continued production) equal to the difference between the going market price of their product and some specified percentage of the predepression price. To minimize erratic price relationships, the predepression price should be defined in terms of (say) a three-year average just prior to the system's taking effect (Appendix B). However, compensatory payments should be agriculture's second

<sup>1</sup> Cf. below, p. 746.

line of defense. Its first line of defense (with other major groups) should be general fiscal policy by which to avoid that unemployment which will bring its own compensatory system into effect.

### *Production Instability: The Problem*

Besides the instability stemming from its interrelationships with our market economy, agriculture has certain unique instabilities of its own: (1) fluctuation in yields and total production due to the vagaries of nature; and (2) for certain farm products, production cycles which grow out of the cumulative effect of the false price expectations of millions of independent producers. Reduction of price and income instability strictly due to these production phenomena is a legitimate objective of agricultural policy which, at the same time, would better meet consumer needs.

Storage has been advanced in recent years as the solution to the first of these problems, with ameliorative features for the second problem as well. During the early 1930's, the Secretary of Agriculture—through the Commodity Credit Corporation—had full discretion to establish commodity loan rates, which were initially fixed at such levels as to hold certain farm products in storage in years of large crops and release them in years of small crops. In 1938, however, Congress began to tie minimum loan rates to the 1910-14 price relationship—52-75 percent of parity, later raised to 85 percent, then 90-92½ percent of parity. For cotton, additional limitations were imposed on the price and quantity of sales from government stocks. As a result of this shift in emphasis from stabilization to price-raising, government-owned surpluses reached unprecedented levels which, had not wartime demands intervened, would have forced a showdown by now.

### *Production Instability: Suggested Solutions*

The concept of an "ever-normal granary" is basically sound. But stocks are bound to become "ever more abnormal" unless stabilization of physical supplies is divorced from the incongruous goal of price-raising. Storage is not an effective means of counteracting cyclical changes in the price level or of avoiding necessary secular adjustments within agriculture. If the limited objective of stabilization of supplies is to be realized, Congress must establish standards of performance in physical rather than price terms.

Thus, Congress should direct the C.C.C. to take, as its standard

of storage policy (within certain specified minimum and maximum carryovers), five year *moving averages*<sup>2</sup> of the production of storable farm products (Appendix A). When, in any year, the actual production of (say) cotton exceeds the five-year moving average ending with that year, the Corporation should purchase sufficient cotton so that the aggregate increase in stocks, public and private (including stocks under loan), equals (say) 60 percent of the excess of actual production over the average. Conversely, when actual production falls short of the moving average, the Corporation should sell that amount necessary to decrease total stocks by (say) 60 percent of the production "deficit." Had this plan been applied to cotton beginning in 1929—with the proviso of a 2-million-bale minimum carryover and a maximum of 6 million—stocks would have reached 6.0 million bales in 1937 but would have fallen to 2.9 million bales, instead of the parity-bound actual carryover of 10.7 million, by mid-1944 (Appendix Table I). A similar plan could have been successfully applied to the feed grains during 1930-44 (Appendix Table II). While this storage program would promote somewhat more stable farm prices and incomes (especially if supplemented by a system of crop insurance), its divorcement from parity would prevent additional generations of maladjusted price-raising offspring.

Hogs have shown the most persistent and clearcut tendency toward production (and price) cycles. Beef cattle production may also tend to be subject to longer cyclical swings. Insofar as these cycles are related to changes in the general price level, compensatory devices previously discussed would promote greater stability, while the stabilization of grain supplies by storage would also contribute somewhat toward this end. Finally, the price uncertainty element in these production cycles could be sharply reduced by a system of forward prices (Section C below) for hogs and cattle-on-feed.

### *C. Toward an Expanding Aggregate Real Income*

#### *Resource Allocation: The Problem*

Whether by compensatory fiscal policy or other means, the attainment of a high level of employment, in a *quantitative* sense, of our economic resources is not enough. Economists must still

<sup>2</sup> The principal argument for a moving rather than a fixed base is that the former reflects upward trends in yields, such as that of corn in recent years.

ask—employment at what? In other words, how may these resources be allocated to *qualitatively* superior uses, so that the aggregate national output of goods and services may be maximized?

The time-tested answer is a sensitive pricing system, in which (1) freely-choosing consumers cast their dollar votes for the allocation of scarce resources among myriad possible uses, establishing relative differences in the remuneration of human or material resources; and (2) resources are sufficiently mobile to level such differences in remuneration whenever and wherever they appear. Fundamentally, the principal barriers to optimum resource allocation are (1) the failure of relative prices to reflect consumer choices and (2) impediments to mobility of resources from less to more remunerative uses. Before 1929, these barriers largely stemmed from the monopolistic price and tariff policies of industry. Government policy of the 1930's, dodging a frontal attack on existing barriers, chose instead the indirect approach of erecting counter-barriers on the agricultural and labor fronts.

Recent agricultural price policy has fostered the efficiency of resource allocation, both within agriculture and between agriculture and the rest of the economy, only to the extent that actual prices have diverged from the historically-based parity-price goals. Price relationships of 1910-14 represent a grossly distorted pattern of current consumer choices, grounded on far different needs and tastes than those of a quarter-century ago. Government payments to farmers and storage programs, insofar as they are tied to parity, insulate agriculture from the socially beneficent effects of a sensitive price system. Furthermore, the immobility of agricultural resources between products and areas is enhanced by the lack of correspondence between commodity and regional cost relationships of 1910-14 and today—a failing buttressed by the use of historically-based production and marketing quotas.

Parity-based agricultural price policy also tends to block necessary reallocation of resources between agriculture and the rest of the economy. Because of the relatively low price and income elasticities of consumer demand for farm products, technological progress in agriculture must, in general, result in relatively lower farm prices. Under these circumstances, adequate farm income should be maintained by a shift of resources (primarily labor) out

of agriculture. Instead, the 1910-14 base for both statutory price and income parity puts the emphasis on secular maintenance of the relative agricultural price level rather than on essential shifts in population. The sharp increase in wartime agricultural production—despite the exodus of 7,000,000 people (including those entering the armed forces) and a shortage of farm machinery—has placed this shortcoming of parity, and its portent for the future, in bold relief.

*Resource Allocation: Suggested Solutions*

Agriculture has a fundamental interest in backing measures—such as anti-trust policy directed at industry and labor alike, reciprocal trade agreements, government “yardstick” competition, and lower taxes on risk capital—which will promote private investment, a freer price system and consumer sovereignty. In such a context, however, agriculture must also be willing to give up its own restrictive price policies which bar optimum resource allocation.

The prime objective of agricultural price policy should, therefore, be the establishment of a system of relative prices which will call forth no more than the quantities of those foods and fibers for which there is an effective demand at full employment. Our wartime experiences have demonstrated both the utter irrelevance of 1910-14 price relationships and the impediments which existing parity formulas impose upon efficient resource allocation for current food requirements. Clearly, then, historical bases must go. Would a system of forward prices or free prices be the better alternative? Under forward pricing, the Department of Agriculture would set production goals for various farm products—based on anticipated consumer demand—and would announce guaranteed minimum prices at the beginning of each production period. Each forward price should be fixed at the level considered necessary to meet the production goal less a margin (say 10 percent) to allow for official errors of estimation of both absolute and relative prices.

The advantages of forward pricing are (1) its orientation toward current consumer requirements rather than anachronistic consumption pattern; and (2) the sharp reduction in price uncertainty, so timed that farmers can plan efficient resource use in meeting these

requirements. Analogous<sup>3</sup> wartime price supports—though handicapped by parity-inflated prices of less essential farm products—have enjoyed notable success in expanding essential farm production. The shortcomings of forward pricing are primarily political (Appendix C). They can be generally applied—particularly to those products requiring contraction—only given a breadth of administrative discretion which Congress is unlikely to create or, at best, long maintain.

Congress should, therefore, while abandoning historical bases generally, limit forward pricing to livestock and livestock products since (1) the future demand for meat, poultry and dairy products will be relatively favorable; (2) these products, in turn, form the principal demand for the feed grains; (3) they are relatively perishable; and (4) some of them are, because of price uncertainty, subject to uneconomic production cycles. The prices of grains, cotton and other products should be divorced from parity and allowed—within the framework of suggested compensatory and storage policies—to seek their own level in a free market. This program would enhance foreign-trade prospects and force resource adjustments for which purpose public price policy is not politically feasible, if indeed appropriate.

This synthesis of forward and free prices can accomplish all that is possible through the instrument of price. Further improvements in resource allocation—particularly between agriculture and non-agriculture—must depend on non-price devices. Thus, no conceivable price policy can solve the cotton problem. But neither is it politic nor humane to wait for freed prices to grind out necessary shifts of labor out of, and capital into, such depressed agricultural areas. Rather, public policy must—apart from transitional “relief” measures (Appendix B)—speed the mobility of excess labor out of agriculture by such positive measures as (1) maintenance of stable and remunerative industrial employment; (2) vigorous promotion of industrialization of disadvantaged regions, accompanied by extensive subsidies to raise human productivity; (3) widespread dissemination of employment information, with financial aid for moving; and (4) elimination of union barriers to entry. On the capital side, such regions should receive more favorable terms for public farm credit, based on

<sup>3</sup> These support prices, being tied to parity, are analogous to forward prices only because, during the war, prices were generally above these parity levels. Unlike forward prices, they could not be equally effective in contraction.

realistic, generously supported farm management research. Such a program, by raising labor costs and lowering capital costs in agriculture, would foster adoption of the best technology and would raise the low level of education and health by which labor immobility is perpetuated.

#### *D. Toward Greater Social Welfare*

Even in a stable, maximum-productivity national economy, problems of social welfare, although less acute, would still be with us. And our society would still choose, as it has so often done, to redistribute aggregate income, according to politically acceptable social values which modify a strict productivity basis of distribution. The raising of family incomes (including public services) which fall below present-day minimum standards of social welfare need not await the attainment of this more desirable economy. But the leveling process should at least be consistent with progress toward the goal of increasing the aggregate product available for redistribution.

Recent agricultural price policy has been primarily oriented toward the problem of unstable and low *aggregate* farm income. It has ignored the resource problem within agriculture, to which the chosen instrument of price, properly applied, could make its principal contribution. And, in limiting attention to aggregate and average (per capita) farm income, it has bypassed still broader resource problems closely related to rural poverty. One-half of the nation's farms contribute less than one-tenth of total farm-product sales. Price policy cannot, therefore, solve this economic problem. Rather, it is apt to continue to increase the disparity of agricultural income distribution. What then can be done?

Low family incomes within agriculture must be supplemented by means which will promote rather than hinder human mobility. Rural education, health, nutrition and housing—through their contributions to the vigor and productivity of a major part of our next generation—are such means, warranting generous Federal support. Once free of excess labor resources, agriculture will also have a legitimate claim to an *average* level of real family income (including the public services necessary for good living and citizenship) fully equivalent to that of comparable non-agricultural employment. In this broadest sense, "parity for agriculture" must immediately become one of our nation's foremost objectives.



Supplementary Materials  
APPENDIX A

*Some Applications of the Proposed Agricultural Storage Policy*

It was proposed above<sup>4</sup> that, for each storable agricultural commodity, Congress should designate

(1) an operating range in terms of specific minimum and maximum carryovers;

(2) five-year moving averages of production as the criteria of storage policy within this range; and

(3) specific percentages of the excess of actual production above (or the deficit below) this average by which year-end total stocks, private and public, would be increased (or diminished) by C.C.C. operations.

Complete stabilization of supplies would require maximum carryovers so large that the costs would far outweigh the gains. It is therefore proposed that the maximum carryovers be established at levels which, though modest, would provide partial offsets to the more extreme deficits in annual production, while effectively barring an undue piling up of stocks. Moving (rather than fixed) averages have the advantage of reflecting upward trends in yields which should not be accompanied by a proportionate growth of stocks. The percentages of "surpluses" or "deficits" by which year-end carryovers are changed should be fixed at the highest levels consistent with the maintenance of maximum flexibility of storage operations within the specified range. How might these principles be applied to cotton, corn, wheat and oats?

*Cotton (Appendix Table I)*

Appendix Table I illustrates how the proposed policy would work out, tentatively assuming (1) a specified minimum carryover of 2 million bales and a maximum of 6 million; and (2) a change in year-end stocks of 60 percent of the difference between actual cotton production and the five-year moving average of production.

In August 1929, the cotton carryover was only 2.3 million bales. On August 1932, through the extensive storage activities of the Federal Farm Board, cotton stocks stood at 9.7 million. By August 1937—aided by a considerable reduction in cotton production—the carryover had been reduced to 4.5 million bales. Had the proposed storage plan been applied instead during this period, total carryover would not have risen above 3.5 million bales (August 1932) and would have stood at 2.4 million in August 1937. During 1928–36, the actual annual carryover averaged 6.2 million bales as compared with 2.3 million under the proposed plan. This difference reflects the fact that the proposed plan would have been based on a physical standard, divorced from efforts to use storage policy to hold up cotton prices in the face of a falling general price level. Nevertheless, during 1928–36, there was sufficient administrative discretion to carry out a considerable reduction in stocks between August 1932 and August 1937, at which date the actual carryover (4.5 million bales) was twice that (2.3 million) had the proposed policy been in effect.

However, with the huge cotton crop of 1937—and with subsequent

<sup>4</sup> Page 746

Congressional action tying loan rates to parity and limiting sales of government cotton stocks—the actual and proposed plans sharply diverge. Actual carryover reached a peak of 13.0 million bales in August 1939, falling only to 10.7 million by August 1944. Under the proposed plan, carryover would not have risen above 6.0 million bales (August 1938) and would have fallen to 2.9 million by August 1944. During 1937–43, actual annual carryover averaged 11.3 million bales, as compared with 4.2 million under the proposed plan. For the 15 years 1929–43, there would have been a net addition to 1928 carryover of only 0.8 million bales instead of the actual 8.4 million. Thus, the proposed plan would have been clearly superior in preventing a long-term pyramiding of stocks.

APPENDIX TABLE I. EFFECT OF ACTUAL AND PROPOSED STORAGE POLICIES ON THE AVAILABLE CURRENT SUPPLIES AND CARRYOVER OF COTTON, 1929–44  
(Thousands of Bales)

Year beginning August	Actual cotton production	5-year moving average <sup>a</sup> of production	Differences between actual and average production	Change in carry-over, end of season		Amount of carryover, end of season		Amount available for current marketing	
				Proposed <sup>b</sup>	Actual	Proposed	Actual	Proposed	Actual
1928	—	—	—	—	—	2,312	2,312	—	—
1929	14,925	15,268	— 443	— 266	+2,218	2,046	4,530	15,091	12,607
1930	13,932	14,834	— 902	(— 46)	+1,840	2,000	6,370	13,978	12,092
1931	17,097	14,657	+2,440	+1,464	+3,308	3,464	9,878	15,638	13,789
1932	15,003	14,667	— 1,664	— 998	— 1,513	2,466	8,165	14,001	14,516
1933	13,047	14,391	— 1,334	(— 466)	— 421	2,000	7,744	13,513	13,468
1934	9,636	13,343	— 3,707	(0)	— 536	2,000	7,208	9,636	10,172
1935	10,638	12,684	— 2,046	(0)	— 1,799	2,000	5,409	10,638	12,437
1936	12,399	11,745	+ 654	+ 392	— 910	2,392	4,499	12,007	13,309
1937	13,946	12,933	+ 6,013	+3,808	+7,034	6,000	11,533	15,338	11,912
1938	11,943	12,712	— 769	— 461	+1,500	5,539	13,033	12,404	10,443
1939	11,817	13,149	— 1,332	— 799	— 2,469	4,740	10,564	12,616	14,286
1940	12,566	13,534	— 968	— 581	+1,602	4,159	12,166	13,147	10,964
1941	10,744	13,203	— 2,459	— 1,475	— 1,526	2,684	10,640	12,219	12,270
1942	12,817	11,977	+ 840	+ 504	+ 17	3,188	10,657	12,313	12,800
1943	11,427	11,874	— 447	— 268	+ 87	2,920	10,744	11,695	11,340
1944	12,228	11,956	+ 272	+ 163	—	3,033	—	12,065	—
Sum or average 1929–44	12,942	13,307	— 5,352	+ 771	+8,432	3,312	8,863	12,893	12,427

<sup>a</sup> Ending with the current year.

<sup>b</sup> The figures in this column represent 60 per cent of the difference between actual production and the moving average, except that the figures in parentheses represent the smaller changes of carryover necessary in order to maintain a minimum carryover of 2 million bales and a maximum of 6 million.

But what would have been the extent of stabilization of annual cotton marketings under the proposed plan? During 1929–36, the range in annual production was 178 per cent. Storage policy reduced the range in annual marketings to 143 percent, as compared with 162 percent had the proposed policy been in effect. Conversely, the range in actual carryover (214 percent) was considerably greater than that (173 percent) under the proposed plan. However, during 1937–43, the proposed storage policy would have stabilized the range in annual marketings slightly more than the actual plan—131 percent instead of 137 percent, the range in annual production being 176 percent. In this latter period, the proposed storage policy would have been more flexible, with a range in carryover of 205 percent as compared with the actual range of 123 percent.

APPENDIX TABLE II. EFFECT OF PROPOSED STORAGE POLICY ON THE AVAILABLE  
CURRENT SUPPLY AND CARRYOVER OF CORN, WHEAT AND OATS, 1930-44  
(Millions of bushels)

Year	Corn					Wheat					Oats					
	Actual production	Difference between actual and average production <sup>a</sup>	Proposed		Actual production	Difference between actual and average production <sup>a</sup>	Proposed		Actual production	Difference between actual and average production <sup>a</sup>	Proposed		Actual production	Difference between actual and average production <sup>a</sup>	Proposed	
			Change in carry-over <sup>b</sup>	Amount of carry-over			Change in carry-over <sup>b</sup>	Amount of carry-over			Change in carry-over <sup>b</sup>	Amount of carry-over			Change in carry-over <sup>b</sup>	Amount of carry-over
1929	—	—	—	136	—	—	—	239	—	—	—	—	—	—	154	—
1930	2,080	507	(0)	136	836	+ 20	+ 15	304	871	1,275	+	+ 64	218	86	218	1,211
1931	2,576	18	(0)	136	941	+ 53	+ 40	344	901	1,124	+	— 45	173	60	173	1,169
1932	2,851	258	+129	265	766	-110	- 82	262	888	1,255	+	— 29	202	39	202	1,223
1933	2,400	207	(-115)	150	552	-301	(-192)	100	714	1,525	+	(-102)	100	456	100	838
1934	1,461	-1,175	(0)	160	526	-232	(0)	100	596	736	+	—	100	674	100	644
1935	2,304	-248	(0)	160	638	- 85	(0)	100	683	1,210	+	+ 10	110	14	110	1,200
1936	1,507	-1,038	(0)	160	630	- 5	(0)	100	630	733	+	—	100	439	100	803
1937	2,651	-1,189	+100	250	874	+210	+157	237	717	1,177	—	(0)	100	16	100	1,177
1938	2,562	56	+ 28	278	920	+204	+128	385	792	1,089	—	(0)	100	70	100	1,089
1939	2,602	72	+ 36	314	741	- 18	- 13	372	754	968	+	(0)	100	150	100	958
1940	2,462	107	+ 80	234	813	+ 17	+ 13	385	800	1,245	+	+ 86	196	128	196	1,149
1941	2,676	94	+ 47	231	943	+ 85	(+ 15)	400	928	1,181	+	+ 88	234	51	234	1,143
1942	3,132	452	+ 926	507	974	+ 96	(0)	400	974	1,350	+	(+116)	350	185	350	1,234
1943	3,054	240	+125	632	836	- 25	- 19	389	855	1,144	+	—	326	32	326	1,168
1944	3,223	313	+156	788	1,109	+174	(+ 19)	400	1,090	1,166	—	—	233	51	233	1,204
Sum or average 1930-44	2,507	-1,607	+652	295	809	+ 63	+111	237	801	1,083	-1,413	+134	180	-1,413	180	1,074

<sup>a</sup> "Average production" is a 5-year moving average, ending with the current year. Years in which corn yield fell below 21.4 bushels, wheat yield below 11.4 bushels, oat yield below 23.8 bushels, were omitted from the average.

<sup>b</sup> For corn, the proposed change in carryover equals to 75 per cent of the difference between actual production and the moving average, when the latter is larger; 50 per cent of that difference when actual production exceeds the average. For wheat and oats, the proposed change in carryover is 75 per cent of the difference between actual and average production. Figures in parentheses represent departures from this general rule to keep carryovers within the following range: corn, 150-350 million bushels; wheat, 100-400 million; oats, 100-350 million.

*Corn, Wheat and Oats (Appendix Table II)*

The feed grains offer a much more perplexing stabilization problem than cotton. Not only are they subject to much wider fluctuations in yield but a period of successive years of either very poor or very good years is not uncommon. Appendix Table II shows how the proposed storage policy would have worked out for corn, wheat and oats, assuming, for illustrative purposes, (1) operating ranges of 150-850 million bushels for corn, 100-400 million for wheat and 100-350 million for oats; (2) five-year moving averages in which years with yields less than 80 percent of the 1900-29 average yield are omitted from the moving average; and (3) the percentage of "surpluses" of actual over average production added to total carryovers is 50, 75 and 75 percent for corn, wheat and oats, respectively; the percentage of "deficits," counteracted by withdrawals from storage, a uniform 75 percent for all three grains.

The proposed ranges in total carryover may be compared with the following actual ranges in carryover during 1930-34: 65-694 million bushels for corn; 83-632 million for wheat; and 79-281 million for oats. Since the major purpose of the moving average is to reflect trends in yields, the omission of years of extremely low yields is necessary if the average is not to be unduly distorted for this purpose. During 1866-1944, yields of less than 80 percent of the long-time average occurred only 6 times for corn (3 times in the early 1930's), 5 times for wheat (once in the 1930's), and 8 times for oats (3 times during the 1930's). It will be noted that, while the percentages of "surpluses" and "deficits" are equal for wheat and oats, they are not equal for corn. The frequency distribution of annual yields is reasonably symmetrical for wheat and oats, but is skewed toward higher yields for corn. For this reason, it is suggested that, when actual corn production falls short of the moving average, 75 percent of the "deficit" be made up from carryovers; when actual corn production exceeds the moving average, only 50 percent of the difference should be added to carryovers.

Had the proposed storage policy been put into effect in 1930, the severe droughts of the next few years would have prevented the building of adequate storage stocks. The favorable yields of 1937-44 would, however, have brought total carryovers in mid-1945 (the war apart) to 788 million bushels of corn, 400 million bushels of wheat and 288 million bushels of oats. Had it been possible to start with these carryovers at the end of the 1929 crop-years, application of the proposed plan would have contributed 349, 512 and 219 million feed units (in bushels of corn-equivalent) in 1930, 1933 and 1934, respectively. There would still have been no storage stocks available for 1936 unless they had been taken out of our minimum carryovers, which step might have been desirable under the circumstances. Reduction to actual minimum carryovers of mid-1937 would have freed another 114 million feed units during 1936.

Thus, the longer the series of bad years, the less the contribution the proposed program could make to stabilization. The same holds for the recent series of good years, during which all three grains reached or approached the suggested limits on carryover. However, the writer does not

consider the far greater maximum carryovers necessary to bring additional stabilization worth the rapidly mounting costs of storage which they would involve. Furthermore, the past few years have seen an upward trend in yields resulting in part from technological progress in agriculture (particularly the general adoption of hybrid corn and better strains of oats). To stabilize grain supplies and prices fully by storage policy would prevent the economic adjustment of feeding practices, livestock-product prices and grain acreage which should be the heritage of a lower cost of grain production.

## APPENDIX B

### *Making the Postwar Transition to a Sounder Agricultural Price Policy*

The principal components of a sound agricultural price policy proposed in the main paper were (1) a counter-cyclical system of compensatory price payments to farmers;<sup>5</sup> (2) a storage policy based on physical rather than price criteria (Appendix A); (3) a synthesis of forward and free prices, divorced from present "parity" standards, for meeting production needs.<sup>6</sup> However, space did not permit discussion of the means for making the transition from present agricultural price policies to these more appropriate policies.

At the present time, Congress has committed the government to support agricultural prices at 90-92½ percent of parity for as much as three years after the war ends. These commitments should be fulfilled but obviously should not be extended further into the future. If the compensatory payment plan were put into effect immediately, and if employment fell below the legislatively-specified level shortly after the war ends, the suggested predepression base would freeze abnormal wartime price relationships. Important structural adjustments within agriculture during the postwar transition would be hindered thereby. While present commitments would contribute little more to these adjustments, the prevention and amelioration of deflation should, at any rate, take precedence over resource allocation in such an undesirable contingency. It appears more likely, however, that the transition will be one of incipient general inflation. Under these circumstances, the groundwork for the proposed storage policy and combination of forward and free prices (subject to the continuation of general price ceilings) should be laid within the limits set by existing commitments.

With nearly 11 million bales of cotton on hand, the proposed storage policy should be enacted to take effect when cotton carryovers have been reduced to (say) 3 million bales. With prompt action by Congress, this process of liquidation can be satisfactorily completed during the next two years. Present excessive supplies should be thrown on the market for what they will bring, the difference between actual market prices and 92½ percent of parity being made up, on current marketings, by direct government payments to cotton producers. There is sufficient pent-up effective demand in clothes-hungry Europe to absorb a large part of present world stocks

<sup>5</sup> Above, pp. 745-746.

<sup>6</sup> Above, pp. 749-750.

without the usual retaliatory aspects of dumping. This program should be supplemented, insofar as necessary, by outright gifts for European and Chinese relief.

It now appears likely that we will end the war with carryovers of corn approaching the minimum of our suggested operating range (Appendix A). Due to the high priority of wheat as a war-relief food, wheat stocks too should be very low by the war's end. At that time, our proposed storage program could, therefore, be instituted immediately for these important grains. Like cotton, both corn and wheat should (apart from the limited storage program previously described) be allowed to establish their free price levels, the government making good on present postwar commitments by paying grain farmers the difference between the free price and 90 percent of parity. In this way, wheat prices would be allowed to fall to a level permitting the extensive use of wheat as livestock feed. From now on, feed demands should take over the place once filled by exports as the "safety valve" of wheat production in excess of nearly constant domestic food needs.

Congress should enact now the suggested system of compensatory payments, forward prices for livestock and dairy products and free prices for cotton and the feed grains, to take effect when present postwar parity-support commitments have expired. This step should be accompanied by the non-price devices suggested for promoting mobility of resources and social welfare in the South and Great Plains. It is recognized, however, that the shortrun immobility of specialized resources cannot (even with such public aid) be counteracted with sufficient dispatch to prevent transitional economic hardship in these regions. Hence, this adjustment to free prices should also be implemented by temporary subsidies, tapering off—according to a pre-established plan—over a 5 to 10 year period. Where possible, these subsidies should be "incentive" payments to speed necessary diversion of agricultural resources. Otherwise, they should be outright cash subsidies, completely separated from market prices and clearly labelled "for relief purposes." The prevailing view among producers, that any extra income obtained through market prices (however enhanced by government policies) is "earned," must be dissipated if optimum resource adjustment is to be realized.

## APPENDIX C

### *An Addendum on Politics*

Existing agricultural policy is based on a keyhole view of our national economy. A more farsighted and comprehensive outlook is essential if an integrated agricultural policy is to be effectuated. What are the political impediments to such an outlook and how might they be overcome?

Underlying, and strengthened by, current agricultural legislation is much irrational but politically-powerful folklore. Agricultural fundamentalism has come to identify the broad and generally valid socio-political "parity principle" with a specific discriminatory legislative "parity formula." Not only is agriculture considered so "basic" as to be the keystone to the over-all national welfare, but certain farm products have been singled

out as "basic," however differently current consumer demands might decree. A meaningless distinction has been drawn between those subsidies which operate through market prices and those which do not. Indifference or even open antagonism to problems of industrial labor and the consumer has been a by-product of these narrowly circumscribed attitudes, which have barred subordination of agriculture's special interests—whether economic, regional or political—to the all-important national interest. All of these attitudes have found ready acceptance in the halls of Congress. The predominance of rural interests, particularly in the Senate and on the important agriculture committees; the political strength of certain farm products, notably cotton and wheat; and the increasing polarization of labor policy in the Executive branch and of farm and food policy in Congress—all these have stood in the way of integrated general economic policy.

Defects of present governmental machinery have, in turn, helped to shape and give impetus to these unsatisfactory attitudes. Congress lacks the organization for comprehensive and coordinated policy-making. The present committee system disperses responsibility in a way that hinders the development of legislative leadership and the adoption of a constructive and consistent over-all legislative program. The membership of such important committees as those on agriculture and labor is so strongly interest-bound as to lack the moderating influence of other points of view. The seniority rule, inadequate technical assistance and the tools for constructive legislative control of administrative discretion have brought additional weaknesses. The Executive branch has, in turn, suffered from major defects in its administrative machinery—serious overlapping of functions, too vague a delegation of authority. The Executive departments too have tended to be interest-bound, with an absence of effective interdepartmental coordination. Finally, channels of cooperation between the legislative and executive branches have not been sufficiently formalized.

On the basis of recent experience with existing governmental attitudes and machinery, what of the political feasibility of our suggested changes in agricultural policy? However great its defects on economic grounds, existing statutory "parity" is so well entrenched as a socio-political symbol as to warrant considerable pessimism about the prospects of its abandonment. The political advantages of the present "parity formula" are its simplicity, its objectivity as a standard of administrative performance, and its emphasis on the instrument of price in attaining agriculture's goals. "Parity"—in the broader but generally valid marginal-productivity and social-welfare senses which we have expounded—is at best much more intangible, more subjective in its application, and more indirect in its effects. Nevertheless, it could be made more palatable politically through objectification in terms of rates of return to resources and minimum physical standards of health, nutrition, housing and education.

It is difficult to see why there should be strong opposition in Congress to our suggested system of compensatory price payments. Here, the danger would appear to be a myopic view of the broader policy question of maintenance of full employment in which all economic groups have a common

interest. Here, Presidential leadership—based upon comprehensive inter-departmental planning—is essential. But the superior fact-finding resources of the Executive must be combined with the political consent of Congress. In the last analysis, Congress must reconcile conflicts of special interests, but the President's role of moderator must be vigorously used to prevent a compromise at the level of the least common denominator of such interests.

If such broad decisions are to be—as they should be—the *joint* policy of both branches of government, Congress could facilitate matters by forming a Joint Committee on Postwar Economic Policy and Planning from the present House and Senate special committees<sup>7</sup> operating under that name. This Joint Committee should maintain continuous official liaison with the major standing committees of each house,<sup>8</sup> the President and his principal cabinet officers. Its major purposes should be (1) the development of co-ordinated and integrated national economic policy, an impossible task under the narrow specialization of existing standing-committee organization; and (2) the maintenance of harmonious Congressional-Executive relationships by which the "separation of powers" may be bridged.

Our synthesis of forward and free pricing is likely to face two major political barriers: the strength of cotton and wheat interests in Congress and Congressional interference with the administrative discretion necessary for forward pricing to work. We have suggested forward pricing only for livestock and dairy products, which are least favored by the present parity standard. Because of their brighter future, these products are least likely to suffer undue price-raising pressure on administrative price decisions. Cotton and wheat, on the other hand, have benefited most from existing parity, reflecting their political strength, particularly in the Senate and its Committee on Agriculture. Therefore, the suggested substitution of free pricing and non-price storage policy for present parity-based prices and storage faces tremendous political obstacles so far as these so-

<sup>7</sup> Representative Colmer (Miss.) is chairman of the House committee; Senator George (Ga.) is chairman of the Senate committee.

<sup>8</sup> The Colmer Committee has 18 members, of whom 4 are also on the Agriculture Committee, 3 on Ways and Means, 2 on Interstate Commerce, and one each on Rules, Judiciary, Appropriations, Naval Affairs, Labor, Banking and Currency, Patents, Merchant Marine, Irrigation and Reclamation, Indian Affairs, Mines, Public Lands, Roads, and Rivers and Harbors. Except possibly for labor, this would appear to be a rather representative cross-section of post-war economic problems. Six members are from the Northeastern states, 4 from the South, 5 from the North Central states and 3 from the Western states. The average years of service per member is 10 years, the average number of committees per member 2.7.

The George Committee has 10 members, of whom 6 also sit on the Finance Committee, 6 on Foreign Relations, 4 on Patents, 3 on Interstate Commerce; 2 each on Banking and Currency, Commerce, Appropriations, Military Affairs, and Labor; and one each on Judiciary, Agriculture, Roads, Indian Affairs, Irrigation and Reclamation, Public Lands, and Public Buildings. Two members are from the Northeast, 3 from the South, 3 from the North Central states, and 2 from the West. The average years of service per member is 12.4 years. This committee would appear to be somewhat less representative than the House committee. Its very important work is further handicapped by the fact that its members serve on an average of 6.9 committees each.



called "basic" commodities are concerned. These same obstacles would appear to assure the unworkability of forward pricing if applied to such commodities.

It is not too much to hope, however, that Congressmen from the cotton and wheat states might be convinced that their constituents would benefit most of all from the suggested non-price means of attaining greater mobility of resources and a higher level of social welfare in agriculture—problems which the instrument of price cannot effectively solve, in either a shortrun or longrun context. Realization of this fact might be hastened if the President would create commissions—composed of leading Congressmen, cabinet officers, social scientists and lay leaders—to draw up long-range socio-economic legislative programs for the rehabilitation and development of the South and Great Plains, our major problem areas.

Finally, the existing Joint Committee on the Organization of Congress could greatly advance the attainment of an integrated national economic policy by (1) a marked reduction in the number of standing committees in each house; (2) making their functions parallel with each other and (when they become clear) with the main postwar divisions of the Executive branch; (3) modifying the present seniority rule and special-interest pattern of committee membership; and (4) providing more adequate technical assistance for both Congress and its committees. A special effort should be made to get a suitable balance of special interests—regional; urban and rural; farm, labor and business—on each committee. The wartime record of the better-balanced Banking and Currency Committees has been superior—in matters of farm and food legislation—to that of the interest-bound Agriculture committees. The present Agriculture committees need to be broadened by a better distribution of commodity interests and the addition of more representatives of urban constituencies. Similarly, the Labor committees require a stronger representation of Congressmen from rural areas.

American democracy cannot forever survive its traditional policy of "muddling through." Comprehensive and broadly-conceived policy-making must yet become the rule, piecemeal and special-interest policy-making the exception. The shadows of the corporate state will not be wholly dispelled by the military defeat of our Fascist enemies. Just as necessary is the substitution of cooperation for retaliation within the ranks of our own political and economic life. In this process of strengthening the democratic way, agriculture will continue to play a leading role on the national political stage. Is it not, therefore, high time that it stop "muffing its lines"?

*The Second Award Paper*

A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING

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THE TITLE suggests three broad goals for agricultural policy. These goals place appropriate emphasis upon the significant problems of agriculture for which solutions are required.

*I. Implications of the Goals*

The first goal, economic progress, emphasizes the necessity of using agricultural resources efficiently. Ignoring certain qualifications, maximum efficiency of resource use requires that each resource be used where its remuneration is a maximum. At any given time the resources employed in agriculture must earn no more or less than could be earned in other pursuits. The returns to comparable resources must be the same on each farm. Maximum efficiency of resource use, assuming competition, is achieved only if each farmer receives the maximum possible net income.

In exploring the causes for failure to attain maximum resource efficiency, the problem may be divided into the three categories indicated above: (a) Between agriculture and the rest of the economy; (b) among farms, and (c) within farms.

The evidence showing misallocation of resources between agriculture and the rest of the economy is the low relative return to many farm laborers and the high relative returns on capital in much of agriculture. The low labor returns in agriculture, an expression of excess labor supply, result from the necessity of a continuous migration from agriculture and impediments to movement. Farm migration is required by high farm birth rates and rapid advances in technology, combined with very slow growth in demand. The deficit of capital in agriculture rests on low farm incomes which prohibit large savings despite a high rate of saving and capital rationing and risk aversion resulting from uncertainty in agriculture.

The great differences in earnings in agriculture, particularly as reflected in regional differences not attributable to individual

managerial qualifications, indicate output could be increased by transfers of resources within agriculture. The differences in farm sizes and resource productivity are outgrowths of labor immobility within agriculture, of credit institutions favoring those in the best capital position, and to long run factors which affect labor productivity (inadequate education, nutrition, housing).

The individual farmer is confronted with many difficulties in maximizing income. A significant factor is the poor guide free market prices provide for resource allocation. Agricultural production takes time; accurate estimates must be made of future prices or income will suffer. Farmers basing production decisions on current prices usually find little relationship between such prices and the prices at time of harvest or sale. Other farmers follow fixed programs, making no attempt to estimate short run price movements. Further, the uncertainty of prices leads farmers to reduce their demands for capital, to buy too small farms, and to place great emphasis upon labor. Credit institutions reinforce at the same points. Income uncertainty places the farmer using borrowed funds in an extremely vulnerable position.

The second goal, adequate income, means an income to farm families sufficient to permit a minimum scale of living consistent with our social values. The goal implies that in a democratic society an interest exists in the well-being of all citizens. Individuals should have an opportunity of employment at useful pursuits, an implication of the resource goal. In addition, special assistance should be given families unable to earn necessary minimum incomes. In an expanding economy the main causes of inadequate incomes are physical and mental abnormalities, impediments to mobility, and the ownership and control of inadequate resources. In many agricultural areas, there are too many people to provide families an adequate income. Here mobility is the main solution. In other circumstances, families have inadequate labor power and capital resources, both being augmentable.

The third goal has two significant implications. First is the desirability of stabilizing farm income in the aggregate. Net or gross farm income fluctuates over wide ranges during the business cycle. This fluctuation is undoubtedly a reinforcing factor in the cumulative aspects of deflation and inflation. Low farm incomes during depressions lead to serious problems of soil deterioration, exploitation of human resources, a reduction in education, and

general social and political deterioration. The wide variability of farm incomes comes from outside agriculture. Aggregate agricultural output is remarkably stable.

Accompanying the instability of total income are forces impinging upon individual farmers. Farmers are subject to income uncertainties unrelated and in addition to aggregate income variations. Prices of a particular product fluctuate independently of the general trend. Yields of crops and livestock products vary from farm to farm. Feed prices and livestock products do not move in unison, resulting in losses at times and large profits at others.

## *II. A Suggested Price Policy—Forward Prices*

A price policy making significant contributions toward achieving the goals must accomplish two tasks:

1. Provide the best possible estimates of future prices that reflect prospective demand and supply conditions;
2. Reduce and transfer much of the price uncertainty confronting farmers to the economy as a whole.

Both tasks can be accomplished by forward prices. Forward pricing places the responsibility of formulation of price expectations upon a group of experts rather than upon several million inadequately equipped farmers. Forward prices transfer, and in the process reduce, price uncertainty by permitting formulation of more accurate expectations and by the combination of risks.

Forward prices require the following types of action by an administrative agency:

1. The estimation of expected prices reflecting the best allocation of resources among agricultural products, given prospective supply and demand conditions.
2. Have available necessary steps assuring the forward prices, which would be some fixed percentage (90 to 95 percent) of the expected price.
3. The announcement of forward prices prior to making of production plans.
4. An extension of the forward prices for a time sufficient to permit completing production plans.
5. The specification of appropriate grade, seasonal and location differentials.

During periods of high employment the only criterion for establishing forward prices is an equilibrium concept. The forward prices should reflect prospective demand and supply conditions. To do otherwise distorts and impedes allocation of resources and either reduces agricultural income or forces subsidization of agricultural production. Making forecasts of expected prices is a difficult task. In itself this is an argument for forward prices since such estimates must be made. Farmers have insufficient time and data available to permit deriving accurate estimates. Making the job the responsibility of experts would provide more accurate reflections of future prices. In reality, the difficulties of price formulation are reduced by its concentration. Individual farmers must not only estimate prospective demand conditions, but must also estimate two other imponderables—the vagaries of Nature and the actions of other producers. Through storage most of the effects of yield variations on prices of feed grains, livestock and other durable products can be eliminated. An individual cannot readily interpret how other producers will react to an uncertain situation, while supply responses to rather certain prices can be more readily evaluated.

It is extremely important that measures used to assure forward prices be consistent with resource efficiency and interfere as little as possible with normal movement of product from farmer to consumer. Techniques used in the past may be criticized on both counts. Production control, minimum market prices, price discrimination and dumping are not appropriate techniques. Neither is a storage program used to raise prices over a period of time and price products out of markets, as occurred with cotton and wheat.

Reliance should be placed on two techniques—supplementary price payments and storage.<sup>1</sup> The supplementary payments would equal the difference between the market price and the forward price. Because of possible errors in forward prices, the forward price should be slightly below the estimated equilibrium price. For perishable crops a schedule of prices varying inversely with yields should be used rather than a fixed forward price. The expected price would be based on anticipated acreage and an average yield.

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<sup>1</sup> An additional technique is subsidized consumption for low income groups. The main objective of this program should be to improve nutrition and not "surplus disposal." As a consequence, unless nutrition goals are distorted, the major contribution would be to stabilize demand for all foods and not to maintain prices of particular foods as required by forward prices.

Producers would be guaranteed a specified total income from the crop. This modification is required to reduce the subsidy expenditure, but would not reduce the income certainty of the individual farmer. Supplementary payments would not be required for durable products that are further processed by farmers; they need not be used for cotton and tobacco.<sup>2</sup>

Supplementary payments can be made within a simple administrative procedure. Forward prices would be established by geographic areas, with differentials based on usual market relationships. The forward price would be stated in terms of average local market prices. Payments would be made in an area when average local market prices were below the forward prices, the payment equaling the difference. Each producer in the area would receive the same payment, regardless of the specific price received. Producers would find it advantageous to find the best market and to produce the most economical quality. Seasonal differentials could be introduced by using a schedule of slowly graduated prices. The only evidence needed by the farmer would be proof of sale and time of sale if seasonal differentials were used.

A storage program is required for the functioning of a forward price system. Important inefficiencies in resource allocation result from the failure of free markets to withhold stocks when production is large and to make supplies available when yields are small. Fluctuations in hog production, for example, are closely related to variations in corn supplies.

The storage program should encompass feed grains, wheat, cotton and tobacco. The function of the storage program should be to improve the distribution of supplies in time and not to raise the average level of prices through time. The complete stabilization of supplies in time should not be attempted. Since storage has certain costs, storage should not go beyond the point at which marginal costs exceed the marginal returns. Because the distribution of crop yields are not symmetrical, complete stabilization could result in accumulating storage stocks equal to an annual production for some crops.

Rules can be established for a storage program which will prevent its use as a price raising measure and the accumulation of unusually large stocks. First, the estimated equilibrium price

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<sup>2</sup> It is assumed that significant proportions of the wheat crop will be used for feed in the future.

would be based on an expected yield which reflected trends in yields. Second, the actual forward prices would be set above and below the estimated equilibrium price. The lower price would be a buying price and the upper a selling price. The range would permit the government to recoup the storage costs and prevent storage operations when crops varied only slightly from the trend yield. There is little reason to store or sell from stocks, except to meet regional deficits, when crops are only moderately larger or smaller than the trend production. Third, an upper limit on storage stocks could be set, which if equaled or exceeded would require mandatory reductions in prices for the next crop year. This would essentially require that in establishing the forward price for the next year, the excess of stocks over the maximum would have to be added to expected production. Though this procedure might not immediately reduce stocks because a large crop might follow, it would limit the size of stocks to manageable proportions and provide an orderly procedure for stock reduction.

Timing—the announcement of forward prices and their time span—is an important problem in forward pricing. The underlying determinant is the production period—a period permitting a significant change in production. For crops the problem is clear cut; the production period is the time required for planning, planting, harvesting and marketing or a year. Hogs have a production period of approximately 16 months. There is no sharp break in dairy production, nor no well defined production period in the usual sense. However, changes of 3 or 4 percent in production can be achieved in 12 to 15 months. Beef cattle present somewhat more difficult, but not insoluble, problems. Forward prices for beef cattle should cover three categories—cows, fed cattle, and feeder cattle. By doing this the time span of forward prices could be limited to about 15 months. The forward prices should be announced in advance of planning operations and simultaneously for products competing for the same resources.

### *III. Forward Prices in a Depression*

Agriculture may follow one of two roads in gaining stable income. One is to copy industry and adapt total output to changes in total demand. This policy, inconsistent with the general welfare, would probably be of little aid to agriculture. Agricultural costs are only moderately responsive to changes in output and the in-

crease in income would be small. The other is to work for suitable monetary-fiscal policies, with provision for maintenance of farm incomes by direct means if depressions are not avoided.

Agricultural income can be maintained during depressions in a way consistent with a general monetary-fiscal policy, without disrupting marketing procedures and the allocation of resources. The method is that of compensatory payments. During a depression period, which could be defined in terms of unemployment, forward prices would be established not on the basis of equalizing supply and demand, but in terms of maintaining agricultural income at some specified level. The difference between the forward price and the market price would be paid to farmers as a compensatory price payment, following the same administrative procedure as outlined for supplementary payments.

At what level should the depression forward prices be established? This is an economic and political question. The prices should not result in an income high enough to attract labor resources back into agriculture but prices must be sufficiently high to prevent soil depletion, human exploitation and bankruptcy. The assurance given to farmers should have some relevance to unemployment compensation, because of equity and to prevent return of labor. The minimum net farm income might be established at 75 percent of the average income for the two preceding non-depression years and the average level of forward prices determined to assure this income. This procedure would reflect changes in the prices of cost items. The individual forward prices would be established on the basis of the relative prices which would prevail under high employment. If the depression is short lived, the forward prices for the preceding non-depression year could be used. However, a long depression would soon outmode these price relationships and provision should be made for adaptation.

Compensatory payments, as outlined, tend to be regressive in their incidence. Farm people making only modest sales would receive very small payments, yet their small cash expenditures are probably more stable than those of the larger commercial farmer. Two solutions are possible. One is a program for assuring every family in the economy sufficient income to provide a minimum budget. The other is to establish a minimum compensatory payment for each family member of all bona fide farmers not receiving other forms of governmental compensation or retaining off-farm



employment. This payment should be modest, perhaps \$20 per year per family member, and would be in lieu of the price payments for all families who would receive less than this amount from price payments.

#### *IV. The Transition From War to Peace*

Present legislation requires price guarantees of 90 percent of parity for many agricultural commodities for as long as three years after the end of the war. One may question the desirability of the guarantee and recognize the difficult problems created. However, a commitment has been made by the government to farmers. To fail to meet the commitment will make extremely difficult the establishment of the necessary trust and confidence in government required as a basis for national economic policies. The commitments should be fully met. "Administrative meddling" with the content of the guarantee in order to reduce its effectiveness will result in an unacceptable political situation leading to future restrictive legislation making adequate administration of farm programs impossible.

The significant problem now is to devise techniques of meeting the commitment with the minimum of economic dislocation. The best procedure is to permit market prices to seek their level and to pay producers the difference between the guarantee and the market price. The money cost of this procedure will be large; the real cost to the nation will be the smallest possible.

#### *V. Conclusion*

Price policy represents a powerful tool, but its limitations must be recognized. In the past, labor mobility has not responded to relative movements of farm and non-farm prices as might be expected. At high relative farm prices many farm families receive incomes lower than obtainable elsewhere. Alternative employment opportunities are meager when low farm prices prevail. Price policy cannot eliminate inadequate incomes. Only to a limited degree are the continuing inadequate agricultural incomes due to farm price behavior. Finally, stability of individual farm income depends on yield fluctuations as well as price.

Parity prices, based on historical relationships, reduce the effect-

iveness of price policy: Parity prices generally mean higher prices, an obviously inappropriate remedy for inadequate incomes. Parity prices impede necessary resource adjustments, as illustrated by wheat and cotton. The departures from parity required to expand fats and oils and livestock production during the war indicates strikingly the shortcomings of parity prices in obtaining suitable resource allocation. Establishing prices as goals leads to clogging of markets and pricing a product out of domestic and foreign markets.

Any price policy must be supplemented by certain conditions and policies if the goals of this paper are to be achieved. These conditions and policies are:

1. An expanding industrial economy to provide outlets for excess farm labor.
2. A strong monetary-fiscal policy to prevent depressions and its associated backlog of excess labor in agriculture.
3. Direct measures to improve labor mobility because mobility is slow even under excellent employment opportunities. A labor outlook, direct incentives to mobility, and appropriate location of new industrial development would be helpful.
4. A generalized crop insurance program to eliminate part of the effects of weather on the income of the individual farmer.
5. Direct measures to improve labor productivity and capital resources of many farm families is required. Steps should be taken to provide families with socially accepted standards of nutrition, health and education. A credit and managerial assistance program should be used to increase capital resources controlled by many farmers.

#### APPENDIX NOTE A

The difficulties confronting farmers in deriving price expectations may be indicated by analyzing the results obtained by using simple methods of estimating future prices.

A method of estimating prices for the next production period which many farmers apparently use, at least approximately, is that the present price will continue to prevail. The errors involved in using this method are indicated in the following tabulation for nine farm products:<sup>1</sup>

<sup>1</sup> The period covered was 1910 to 1943.

	Average absolute error	Mean of index	Percentage of mean	No. of years error greater than 10%
Corn	26	123	21	23
Hogs	24	120	20	22
Beef cattle	17	122	14	18
Wheat	22	121	18	21
Potatoes	48	139	35	29
Poultry	17	147	12	16
Eggs	17	125	14	19
Cotton	27	126	21	25
Butterfat	18	132	14	19

The errors average from 12 to 35 percent of the mean price for the period. In only one case (poultry) was the error less than 10 percent more than half the time (16 out of 34). The writer has tested other simple methods of estimating future prices and no one is consistently superior to assuming that the present price will continue. If farmers can make no more accurate estimates of future prices than this, important misallocation of resources must occur and uncertainty must be very important.

#### APPENDIX NOTE B

A forward price that is independent of the actual yield during any year results in a fluctuating income from the national output. For this reason it is sometimes believed that forward prices or loan rates should be varied in order to stabilize the total value of a crop. For perishable crops using a forward price schedule instead of a fixed price a small range is desirable because storage has no function in such cases and the schedule is the only way to avoid subsidy expenditures when high yields occur. Subsidy expenditures resulting from such yields perform no useful purpose and should be avoided.

Where storage is possible certain net social gains are possible which would be dissipated if the total value of a crop were stabilized. Under certain circumstances, if stability were achieved stocks would accumulate from small crops and sales from stocks would occur when a large crop occurs. Even where this situation would not prevail, a storage program would be ineffective in stabilizing the supplies of a crop through time and fluctuating livestock supplies at least as large as in the past would occur.

The main question which we are considering here, however, is this: Would stabilizing the total value of a crop against yield fluctuations add stability to the income of the individual farmer? The answer is in the negative. The crop yield on any individual farm has very little relationship to the national yield. A national yield is the average of yields from several thousand to several million producers. The change in the national yield from year to year reflects only average changes. When the national yield increases, many farmers will actually have lower yields, while others will have a much larger increase. The yield on an individual farm, and the change of that yield through time, is due to many factors, only a few hav-

ing significance in their effect on national yield. Even a cursory examination of state yields indicates marked year to year variations for most states. For individual farmers divergent and unrelated variations are much greater.

If stabilizing the total value of a crop were to completely stabilize the income of an individual producer, the yield of the individual producer would have to vary proportionately with the national yield through time. Perfect correlation alone is insufficient, since perfect correlation is consistent with variations that are not proportional. This last point can be best seen by examples, given in the following tabulation.

National yield	Price <sup>1</sup>	Price <sup>2</sup>	Case A <sup>3</sup>			Case B <sup>4</sup>		
			Yield	Income <sup>5</sup>	In- come <sup>6</sup>	Yield	Income <sup>5</sup>	Income <sup>6</sup>
20	1.25	1.00	20	25.00	20	38	47.50	38.00
25	1.00	1.00	30	30.00	30	40	40.00	40.00
30	.83	1.00	40	33.32	40	42	34.00	42.00
				88.32	90		121.50	120.00

<sup>1</sup> Price required to stabilize total value.

<sup>2</sup> Price independent of actual yield.

<sup>3</sup> Yield in Case A is  $-20+2$  (national yield).

<sup>4</sup> Yield in Case B is  $30+.4$  (national yield).

<sup>5</sup> Income per acre if total value of national crop stabilized.

<sup>6</sup> Income per acre if price is independent of national yield.

Two examples are shown. In both cases perfect correlation between the individual farm yield and the national yield is assumed. In neither case would the individual producers have a stable income from year to year, assuming no change in demand conditions. In one case (B) the producer's income would be more stable with a fixed than a varying price.

The assumption of perfect correlation is obviously invalid. The following table gives results of some calculations made for the period 1903 to 1939. Since individual farm data were not available, county and state data were used. The results achieved overestimate the possible reduction in income variations which an individual farmer would have received since the assumption would have to be made that individual yields changed proportionately with the county or state yields. Corn and wheat were chosen because county data were available for the two crops for the whole period. Analysis of state yield data on other crops indicates that similar results would have been obtained. The counties were selected at random, after stratification, from Iowa and Kansas.

The calculations in the table are based on the assumption that demand was stable throughout the period and that a fixed price of \$1.00 or a varying price averaging \$1.00 would have prevailed. The last column indicates the change in income variability as measured by the change in variance. The variance of income with a fixed price has been used as a base for comparison. Varying prices would have had little effect on income stability,

with the exceptions of Appanoose and Marshall Counties in Iowa. However, in the latter county the variance was increased rather than reduced.

In no case was the reduction in variance as large as would be indicated by the square of the correlation coefficient. The reason was that yields in the areas did not have an average proportional relationship to the national yield. Yield variations would be proportional if the regression constants were zero. The constants tend to differ from zero by important amounts, particularly where the correlation is large.

If individual farm data were available, it seems logical to assume that very few farmers would receive a reduction in income variance of more than 5 percent, while others would actually have the variance of their income increased by stabilizing the total value of a crop. Given the important losses arising due to the elimination of the possible gains from storage, there can be little basis for stabilizing the total value of a durable crop. The argument for a varying price for perishable crops must rest on other grounds than the reduction of income variability.

Area	Crop	$r^{21}$	Regression <sup>2</sup>	Variance <sup>3</sup>		Change in variance <sup>4</sup>
				A	B	
						(%)
North Dakota	Wheat	.575*	-21.9+2.26X	8.3	7.4	-10
Sherman Co., Kan.	Wheat	.178*	-12.8+1.58X	25.6	24.0	- 6
Marshall Co., Kan.	Wheat	.094	5.2+ .80X			
Osborne Co., Kan.	Wheat	.141	- 6.9+1.35X	23.8	22.2	- 7
Labette Co., Kan.	Wheat	.051	3.8+ .57X	11.7	11.9	- 7
Appanoose Co., Ia.	Corn	.711*	-16.8+1.80X	58.8	30.7	-42
Marshall Co., Ia.	Corn	.370*	8.0+1.39X	61.7	36.1	-34
Marshall Co., Kan.	Corn	.404*	-26.8+1.80X	94.2	74.6	-21
Floyd Co., Ia.	Corn	.153†	6.7+ .94X	67.8	58.8	-13
Humboldt Co., Ia.	Corn	.142†	17.6+ .91X	68.9	74.7	+ 8
Lucas Co., Ia.	Corn	.569*	-15.9+1.81X	68.0	45.0	-34
Webster Co., Ia.	Corn	.276*	3.2+1.42X	85.9	62.9	-27
Sherman Co., Kan.	Corn	.133†	-14.8+1.11X	108.6	98.0	-10
Osborne Co., Kan.	Corn	.261*	-29.9+1.69X	129.0	108.5	-16
Labette Co., Kan.	Corn	.347*	-13.2+1.14X	44.0	36.8	-17

<sup>1</sup> Square of correlation coefficient of area and national yield.

<sup>2</sup> Regression of area yield on national yield.

<sup>3</sup> Variance of income per acre assuming a fixed price of \$1.00 in Column A and a price varying inversely with national yield and averaging \$1.00, shown in Column B.

<sup>4</sup> Reduction or increase in variance, using fixed price as a base.

\* Significant at 1% level.

† Significant at 5% level.

A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING

FREDERICK V. WAUGH  
*U. S. Department of Agriculture*

WE SHALL propose two price programs for American agriculture: one for the "Steagall Period," and another for the "Post-Steagall Period."

I. *Program for the Steagall Period.*

The "Steagall Period" is the time during which the Federal Government is committed to support prices of farm products. Congress defined this period as *during the present war and until the expiration of the two-year period beginning the 1st day of January immediately following the date upon which the President by proclamation or the Congress by concurrent resolution declares that hostilities in the present war have terminated.*

Federal legislation directs the Department of Agriculture to support the prices of most important farm products during this period at *not less than 90 percentum of the parity or comparable price therefor.* (Cotton is to be supported at 92½ percent of parity.)

This legislation was passed for two good reasons: first, to encourage a large output of products needed in the war effort; and, second, to protect farmers from a possible sharp drop in prices and incomes while they are readjusting from war to peace.

In retrospect, we may well question the wisdom of the rigid commitment to support prices by a mechanical application of the parity formula. Nevertheless, the Government has made a definite commitment. However ill-advised the details of this commitment may now appear, it was a specific promise to farmers. That promise should be carried out. We propose the following steps:

### A. *Prompt Announcement of Termination.*

Actual fighting in World War I ended in November 1918, but the war was not officially terminated until July 1921. It is quite possible that an even longer period might be required after the defeat of Japan to liquidate all matters relating to the present war. If Japan is defeated in the summer of 1946, this would mean that the official termination of the war might be postponed at least until some time in 1949. The Government would be committed to support prices of farm products until at least January 1, 1952.

The intent of the existing legislation is to protect the price of a farm product only for a period that will allow farmers to *make a readjustment in the production of the commodity*. In no case will the length of this period depend upon the time taken to wind up all military and legal matters related to the present war.

Therefore, we make two recommendations concerning the termination of the Steagall Period:

1. When actual fighting has stopped all food and fiber requirements should be reviewed. As soon as it is clear that these requirements will drop substantially and that American agriculture should begin to readjust to a peacetime basis, the President should proclaim that *hostilities have ceased for the purposes of all agricultural price support legislation*.
2. Congress should consider the advisability of clarifying present legislation by authorizing the Secretary of Agriculture to make a proclamation *when he finds that it is no longer necessary to encourage the expansion of production of any agricultural commodity* and of directing him to announce that *price supports for the commodity will be discontinued after a period of two years from the date of the proclamation*. This appears to be in accord with the intent of present legislation. It would authorize a gradual termination of the wartime price support program.

### B. *Programs to Stimulate Demand.*

No price support program will work very long without a balance between production and consumption. Our main

efforts should be to keep this balance by maintaining a high rate of food and fiber consumption. In order to do this it will be necessary to give increased attention to the processing, marketing and distribution of foods and fibers. The Department of Agriculture should be given broader responsibilities in these fields. It might be desirable to change the name of the Department; perhaps to the "Department of Food and Agriculture." It should carry out the following programs to maintain high consumption:

1. *A national nutrition program.* The emphasis of this program would be upon measures to improve the diets of undernourished groups. The School Lunch Program should be expanded to provide, in cooperation with State agencies, one balanced meal a day for every school child—and also as many children of pre-school age as practicable. In addition, we will need a program to improve the diets of millions of low-income families. This might well be done along the general lines indicated in the National Food Allotment Bill (S. 1151, introduced June 18, 1945). This would be a voluntary program; applicants would pay part of the cost; they would buy enough food coupons to provide a diet meeting modern nutritional standards; and, like the former Food Stamp Plan, the foods would be distributed through established dealers.
2. *A foreign trade program.* A revival of foreign trade will be essential. The best possible domestic nutrition program will not provide adequate outlets for wheat, cotton, tobacco, and other export crops. The United States should use its influence to bring about a general, worldwide relaxation of international trade barriers. But we should recognize that progress along these lines may be slow and difficult. Therefore, we should also proceed immediately to work out international commodity agreements aimed at an orderly distribution of world supplies of the principal export commodities. These agreements should provide a "buffer stocks" program to even out fluctuation in supplies. They should also include measures to make surpluses available to undernourished populations in areas of chronic need.



3. New uses should be considered on a true "infant industry" basis; that is, surplus farm products should be made available for these uses at less than the support price if, and only if, there is a reasonable expectation that the new industry can eventually stand upon its own feet.

C. *Market Price Supports vs. Compensatory Payments.*

In spite of the measures outlined above, it is likely that surpluses will develop in the Steagall Period; that is, farmers probably will produce more of some things than the market will take at 90 percent of parity. The following measures are proposed to deal with this situation:

1. When the surplus is small and "manageable" it should be purchased or put under Government loan. It is "manageable" if a Government program can use it efficiently;—for example, by storing it against real future needs, or by using it for school lunches.
2. When the surplus is not manageable in the above sense, Congress should authorize compensatory payments to farmers in lieu of market price supports. The compensatory payment would make up the difference between the market price and 90 percent of parity. This would automatically prevent the piling up of surpluses, because the market price would drop to whatever level necessary to move the commodity into consumption in domestic and foreign markets.

Compensatory payments are no panacea for the problems of food and agriculture. First, like market price supports, they will tend to maintain a high rate of production even if demand falls off. Second, the direct costs from the U. S. Treasury of compensatory payments probably would be much greater than the cost of market price supports. This is because the demand for most farm products is inelastic; that is, a surplus of 10 percent tends to lower prices at the farm by more than 10 percent.

Too much emphasis should not be put upon relative costs from the U. S. Treasury. The public will pay for either price support program either in the form of taxes or in the form of higher food costs. Yet costs to the treasury are quite important. We believe it would be unwise

to rely entirely upon direct payments, and suggest only that they be authorized to meet special situations in which the surplus cannot be handled effectively by the government.

#### *D. Production Controls.*

As a last resort, it may be necessary to reduce production marketings of some specific commodities. In such cases we should avoid compulsion and regimentation. Individual quotas will doubtless be needed, but the farmer should be allowed to exceed his quota without incurring any penalty other than a lower price for the excess amount.

Under a program of compensatory payments this could be done simply by making Government payments to the farmer only on his quota amount; but allowing him to produce and sell as much more as he pleases at the market price. This would be an indirect form of production control. It would, in effect, set up a two-price system; 90 percent of parity for the quota, and a lower price for additional amounts.

If the price of a given commodity is supported by Government purchases or loans, the most effective way of establishing such a two-price system would be by taxing the extra-quota amounts sold by each farmer. In such cases the tax should be computed to represent as accurately as possible the difference between the support level and the estimated "free" market price, (that is, the price that would prevail if the market were unsupported).

#### *II. Program for the Post-Steagall Period.*

The program outlined above for the Steagall Period is based upon the conviction that the Government's promises should always be carried out, even if they involve serious economic difficulties. But it is high time that everyone—farmers, Congressmen, Government officials, and others—recognize the inherent unsoundness of any attempt to freeze prices for any considerable periods at any stated percentage of a historical parity. Whether this is done by purchases and loans, or by payments to farmers, it can lead only to a poor use of economic resources. This is because it inevitably tends to prevent shifts from com-

modity to commodity, and from farming to other occupations, in line with changes in the effective demand of the public, or in line with changes in production costs.

The worst program that might be urged upon Congress would be to extend the Steagall Period indefinitely or permanently, and then to tinker with the parity formula to find ways of raising the price-support levels for one product after another. Such a program could end only in disaster; either in the form of unbearable regimentation, or in the form of unmanageable surpluses.

Yet there is need for a permanent program of "forward prices" to guide agricultural production. Experience has demonstrated that research and education in farm management are not enough. The Outlook Program before the war provided farmers with facts, statistics, analyses, and forecasts. This was good, but it should be supplemented with more definite assurances concerning prices. During the war we have seen the effectiveness of forward prices as a means of stimulating the production of critical items. We have seen, also, that advance notice of a drop in price supports can lead to a sharp reduction in output; for example, the announcement of a drop in the support price for hogs was an important factor in reducing farrowings in 1944.

We should not abandon price supports after the Steagall Period. We should use them as an essential part of a revitalized Outlook Program to guide agricultural production and marketing in the long-term interests of the farmer and the general public.

But this can be done only if the price support levels are frequently adjusted in line with changes in demand and in the costs of production.

We propose the following program to take effect immediately after the end of the Steagall Period:

*A. Forward Price Program.*

1. The Department of Food and Agriculture would announce the support level for each farm product at least six months in advance of the marketing period, and, where practicable, before the farmer plants his crops or breeds his livestock. These forward prices would be guaranteed by commitments either to support market prices or to make compensatory payments. They would be

given wide publicity through an Outlook Program in co-operation with the Land Grant Colleges.

2. In determining the support level for any commodity the Department would first compute the simple average of the support levels for the preceding three years. This would be expressed as a percentage of parity. We shall call this average  $S_1$ . For example, if in the preceding three years the price support for hogs had been 95, 105, and 91 percent of parity the average

$$S_1 = \frac{1}{3}(95 + 105 + 91) = 97 \text{ percent of parity.}$$

The new support price (which we shall call  $S_2$ ) would be determined by adjusting  $S_1$  to take account of conditions of demand and supply.

The method of adjustment will be described very briefly in the two following paragraphs. It will also be described and justified more fully in a technical appendix. Essentially we propose to adjust the support price levels on the basis of the price-support experience in recent years—lowering the price if there have been surpluses and raising it if there have been deficits.

3. If in the preceding three years the market price had been “free” (that is, unsupported by purchases or by loans) the Department would compute the simple average of the market price, as a percentage of parity. We shall call this average market price  $M$ . The new support price,  $S_2$  would be the simple average of  $M$  and  $S_1$ . For example, if the support price in the preceding three years,  $S_1$ , averaged 95 percent of parity; and if the market price averaged 101 percent of parity the new support price,  $S_2$ , would be 98 percent of parity. But if the market price averaged 73 percent of parity (compensatory payments making up the difference between that level and a support level of 95 percent of parity) the new support price would be 84 percent of parity.
4. If purchases or loans had been made in the preceding three years to maintain the market price, the new support level would be lowered from  $S_1$  by a percentage equal to one-half the percentage of the annual production acquired by the Government for price-support purposes. For example, if the Government purchased (or acquired under loans) 8 percent of the production of a given com-

modity in order to support the price at 90 percent of parity, the new support price,  $S_2$ , would be 86 percent of parity.

*B. Programs to Stimulate Demand.*

The consumption programs outlined for the Steagall Period would be continued permanently and would be expanded whenever there were a business depression and unemployment. This would not only help stabilize farm income; it would help maintain diet and health; and it would have a considerable stabilizing effect upon the economy as a whole.

*C. Production Control.*

There would be no acreage allotments nor marketing quotas.

*D. Soil Conservation.*

Soil conservation payments would be made solely to encourage sound practices intended to maintain agricultural productivity.

*E. Income Payments.*

It is possible that, in a period of industrial depression, farm incomes might drop in spite of the programs outlined above. Unless large appropriations were made for consumption programs, continued surpluses might lower the support price levels for all major farm products in a period of general depression.

In such cases the income of farmers should be supplemented by some form of income payment. Perhaps the best form of payment is one conditioned upon compliance with a program of sound readjustments in the agriculture of each area. Each State and county should be asked to develop a long-term program to make the best possible use of its farming resources in view of prospective demands. Local farmers and local research agencies would have the main responsibility for developing these programs.

### TECHNICAL APPENDIX

*Adjustment of Price Support Levels in the Post-Steagall Period*

We have proposed two methods of adjusting price support levels in the years following the Steagall Period. Both of these methods are based upon the price support experience of the three years immediately preceding the adjustment. Both assume that if the support program during these three years had resulted in a large surplus of any commodity, the price support level was too high and should be lowered. They assume, likewise, that if

market price of a commodity were consistently above the support level in the preceding three years, the support for that commodity should be raised.

We propose here to explain more fully the principles involved in these adjustments, and to demonstrate that they would tend to bring about a balance between production and consumption.

### *I. Adjustment if Market Price Were "Free"*

The market price in the preceding three years would be considered "free" if there had been no price-supporting purchases nor loans. It would have been "free" if (a) the market price had been above the support levels, or if (b) the difference between the market price and the support level had been made up by a compensatory payment.

In either case let

$S_1$  = the simple arithmetic mean of the price supports during the previous three years, expressed as a percentage of parity.

$M$  = the simple arithmetic mean of prices received by farmers during the previous three years, expressed as a percentage of parity.

$S_2$  = the new price support level (the forward price), expressed as a percentage of parity.

Then the proposed adjustment is

$$S_2 = \frac{1}{2}(S_1 + M).$$

Let us see how this would work. First, let us consider the situation if the free market price  $M$ , had been higher than the support level,  $S_1$ .

In Figure 1 the curve labeled "supply" shows the amounts of a given commodity that farmers would produce at various prices. The curve labeled

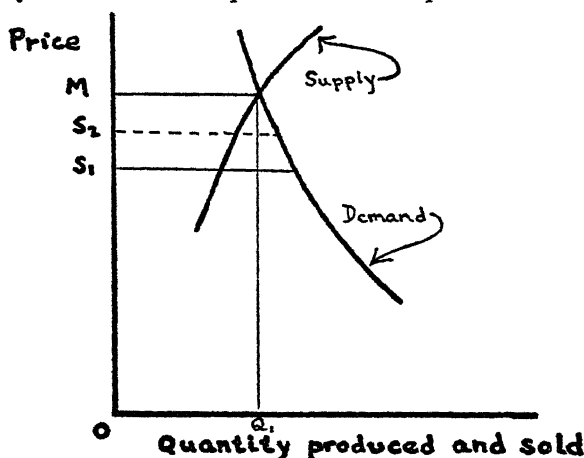


FIG. 1

"demand" shows amounts the markets would absorb at these prices. At the support level,  $S_1$ , farmers are unwilling to produce as much as the market would absorb. Production and consumption are balanced at  $Q_1$  with a market price,  $M$ , that is higher than the support price,  $S_1$ .

This situation will arise only if the support level,  $S_1$ , is lower than justified by demand and supply conditions. This situation would indicate either an increase in the demand for that commodity or an increase in comparative costs or production. An increase in the support level would be clearly justified.

Possibly the level could be raised to  $M$  immediately. Our proposal is more conservative. Raising the level to  $S_2 = \frac{1}{2}(S_1 + M)$  would partly overcome the maladjustment the first year. A series of such adjustments in later years would tend to place the support level at approximately the point where production and consumption balance. This is true not only of the simple case illustrated, in which we assume stationary demand and supply curves. The adjustment would also tend to encourage a balance between production and consumption in case there were definite trends in demand conditions or in supply conditions.

Now, let us consider what would happen if the free market price,  $M$ , were lower than the support price,  $S_1$ . In such cases we assume that compensatory payments of  $(S_1 - M)$  were made to farmers for each unit produced and sold.

The situation is illustrated in Figure 2.

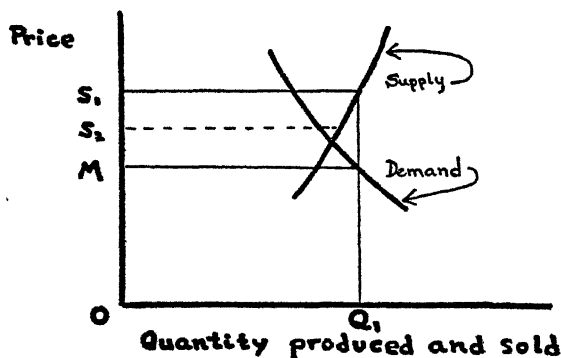


FIG. 2

In Figure 2 we assume that the supply curve and the demand curve for a commodity are such that farmers produce  $Q_1$  at the support price,  $S_1$ ; and that the market will not absorb the supply at this price. The market price drops to  $M$ . The government makes compensatory payments to farmers of  $(S_1 - M)$  for each unit produced and sold.

This situation, continuing for three years, demonstrates that the support level,  $S_1$ , is higher than is justified by demand and supply conditions. Either the demand for the commodity has fallen, or costs of production have been reduced.

The proposed adjustment,  $S_2 = \frac{1}{2}(S_1 + M)$  will always tend to bring production and consumption more nearly toward a balance. Ordinarily the balance will not be exact the first year, but a series of such adjustments will tend to bring about the proper balance whether demand and supply conditions are stationary, or whether they follow definite trends.

## II. Adjustment When Market Prices Had Been Supported

When the market price had been supported during the previous three years, a different adjustment would be needed. In this case the market price would be an artificial price that did not indicate the desirable level of supports. This fact is sometimes overlooked in connection with proposals for computing a "true" parity price simply by taking a more recent base period, or by using a "pre-depression" market price. If the market price has been supported by purchases or by loans in the proposed base period, we should take into consideration the surpluses that have resulted.

Our proposed adjustment, and its consequences, are illustrated in Figure 3.

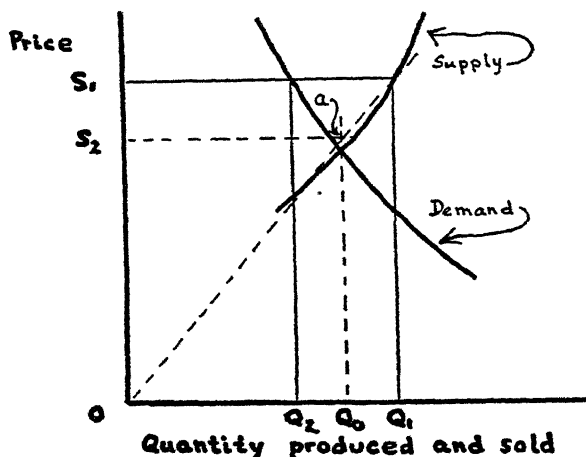


FIG. 3

We assume in Figure 3 that the market price of a commodity was supported at  $S_1$ ; and that demand and supply conditions were such that farmers produced  $Q_1$ ; while the market would absorb only  $Q_2$ . This left a surplus of  $(Q_1 - Q_2)$  to be acquired by the government. Continued surpluses of this kind over three years demonstrate that  $S_1$  is higher than justified by current market conditions. How much should the support level be reduced?

Our proposal is that the new support level should be

$$S_2 = S_1 \left( 1 - \frac{Q_1 - Q_2}{2Q_1} \right) = \frac{S_1}{Q_1} \left( \frac{Q_1 + Q_2}{2} \right)$$

Graphically, we can locate  $S_2$  on the diagram by the following procedure: draw a straight line from the origin,  $O$ , to the intersection of the perpendiculars at  $Q$  and at  $S_1$ ; locate  $Q_0$  half-way between  $Q_1$  and  $Q_2$ ; and erect a perpendicular at  $Q_0$ ; the two lines just drawn intersect at  $a$ ; a horizontal line drawn through  $a$  will intersect the price axis at  $S_2$ .



The adjusted support price,  $S_2$ , will ordinarily be an improvement over  $S_1$ ; that is, it will ordinarily more nearly balance production and consumption. The balance is not likely to be exact the first year, but a series of adjustments will ordinarily tend toward such a balance.

Perhaps it is well to note that in one extreme case this type of adjustment might fail to bring production and consumption closer together. This extreme case would be that in which the supply curve, the demand curve, or both were almost horizontal (that is, extremely elastic). In such a case only a slight adjustment in the support price would be needed to bring production and consumption into balance. Our proposed adjustment would be too great in such cases. We believe that such extreme situations are at least rare, and probably non-existent. If experience with the program should demonstrate the existence of such situations in the case of specific commodities the adjustment formula could be corrected to reduce the

support price by less than  $\frac{100}{2} \left( \frac{Q_1 - Q_2}{Q_1} \right)$  percent.

This difficulty would not arise in connection with the adjustments illustrated in Figures 1 and 2. In all cases those adjustments would bring the support price closer to the equilibrium price.

The proposed adjustments are simple; easy to understand, and easy to administer. They are objective and do not discriminate unfairly as between different groups of producers or consumers.

Even during the Steagall Period, when prices of all important agricultural commodities would be supported at 90 percent of parity, farmers would have advance information about the adjustments in support-price levels that would become effective at the termination of the period.

A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING

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AS A PRODUCER of agricultural products, I wish for the following in respect to prices:

- (1) To sell my product at a price which, when applied to the volume that I am able by faithful effort to raise, will cover my costs and return me an income equal to that which I could earn in any other occupation;
- (2) Protection from extreme economic disturbances beyond my control;
- (3) The least possible regimentation consistent with the above.

The first desire can be realized by two educational programs. In one of these educational programs I should be kept fully informed as to changing needs for the crops and livestock which I grow and for the crops and livestock which I may grow. The U. S. Department of Agriculture and the Land Grant Colleges are now equipped to render this service. In planning my production for the year ahead I shall be guided by probable profits under alternate production plans at prices which I am led to believe will apply to my products at the time of sale. In addition I should be kept informed as to the income which men of ability similar to mine are receiving in other occupations. This is the parity in which I am interested, the relation of my income to that of men with like skills in trades and industries.

The other educational program should provide me and my children an opportunity to learn other occupations in which we are interested and for which we can be fitted. Also my children's training should prepare them to make necessary occupational and social adjustments and give them confidence of success and happiness in other occupations at other locations. When such training has been secured, we will continue to farm or leave the farm for others to work, depending on the relative advantages which these alternate occupations offer. If I must leave the farm in the interests of my

family, this I will do until such time as it may once again be equally profitable for me to farm.

I cannot ask society to support me in an over-manned occupation, but rightly can ask for the educational opportunity to prepare for an occupation where my services are needed in larger degree and where the financial reward promises to be greater. Freedom of movement from one job to another is a great income equalizer, and if society will keep the occupational door open and make the necessary training available, the goal desired of equal returns for equal effort will be achieved.

Prices for the products of the farm are not predictable at planting time, as unpredictable as some of the principal causes of their change—war, weather, governmental monetary policy. During the year a heavy investment in growing crops and livestock, several times any possible net income, is built up. On almost any year a severe break in prices can result in heavy losses that may reduce or end my production operations. I may be the chief loser, but society as a whole will be adversely affected if the operations of my neighbors and myself are reduced by financial calamity.

Protection from losses due to falling prices may be achieved by the application of an old, well-tried, and widely accepted device. Risk insurance can be made available by government with relative ease on an annual basis. The protection needed most is against a drop in price from one harvesting or marketing season to another, and against a too rapid price decline over a period of years. I would like protective assurance that a price drop of not more than ten percent would occur from one marketing season to another. The determination of the amount of any price change should be on a national or central market basis for a given commodity. A satisfactory computation for most products could be made from the Department of Agriculture's figures, called Average Prices Received by Farmers for Farm Products. For indemnity purposes I would like a cash payment determined by the following calculation: quantity of each principal product sold from my farm in the current season *times* the average sale price in my county in the marketing season one year previous *times* the percentage, if positive, obtained by subtracting from 90 percent the percentage which the national farm price of the commodity in the current marketing season is of the national farm price of that commodity in the marketing season one year previous. In order to insure against a too rapid price de-

cline over a period of years it would be necessary to substitute for the denominator, after the plan has been put into operation, the *effective support price* of that marketing season one year previous, whenever this is larger. The indemnity can be stated by formula as follows:

$$\text{Indemnity} = \left(0.90 - \frac{a}{b}\right)cd$$

Where  $a$  is U. S. marketing season price for the current year,  $b$  is U. S. marketing season price for the preceding year (or effective support price whenever larger),  $c$  is county marketing season price for the previous year,  $d$  is quantity sold from the farm in the current marketing season.

*Note:* The quantity  $\left(0.90 - \frac{a}{b}\right)$  would be applied to all farms in the

United States producing a given commodity in any year and would be applicable only when positive. The quantity  $c$  would be applied to all such farms in a given county. The quantity  $d$  would vary with each individual farm.

Such insurance would serve two purposes: it would protect consumers from farm commodity scarcities with accompanying high prices which have tended to occur following years of such low farm prices that many producers are put out of production, and would protect the producer from financial ruin. I suggest that the cost be actuarially determined and that half the cost be paid by the producer and the other half by the government.

Congress has already provided a crop insurance law, Ch. 36, Title 7, U. S. Code, 1940 Ed., Supp. IV, 1941-45, Secs. 1502-1519. It is the stated purpose of this law "to promote the national welfare by alleviating the economic distress caused by crop failures . . . by maintaining the purchasing power of farmers and by providing for stable supplies of agricultural commodities. . . ." The procedure has been developed for insuring "against loss in yields" of certain crops. Premiums are based on historic yields and current acreage on each farm. Premiums for risk insurance against price drops could be based on the same factors. In case of livestock a similar device could be employed. Application could be on the same form as that used for "yield" insurance. Average prices received by farmers for all major farm products are now being assembled for the country as a whole and by states by the Bureau of Agricultural

Economics, and published in *Crops and Markets*. County prices for many commodities would be the same as state prices, but when this is not the case, the same device and for most part the same basic data can be used for obtaining county sale prices. Actuarial cost would have to be determined on a country-wide basis. The same agency on the national, state and county level could be used to administer the proposed price insurance program as that which handles the crop insurance law to which reference has been made.

Now the third desire mentioned above was for the least possible regimentation. I have suggested an enlargement of the services of one agency, the Federal Crop Insurance Corporation. Only insurance powers should be given this agency: no control over either amount of production or prices. At the same time I am suggesting the retirement of the Commodity Credit Corporation and the sale of its stocks of commodities. The insurance program suggested would protect producers in large measure from the falling prices which might result. The Agricultural Adjustment Agency programs of restriction in production or of relief, even though payments are made in the name of soil conservation, should be stopped. The provisions of the Steagall Amendment, promising 90 percent of parity, should not be extended and its operations should cease when the present commitments to producers have been satisfied. The plan I have suggested also provides a 90 percent price protection, not 90 percent of a theoretical parity, but 90 percent of the previous year's prices or of the effective support price in that previous year, which would make it possible to begin where the Steagall Amendment leaves off, by each year adjusting prices where necessary, downward by 10 percent, until long-time economic changes brought about by competition in the domestic market, new world market conditions and changed costs of production have become operative factors in price. With the plan suggested, fewer farmers will fail and the rehabilitation programs such as those operated by the Farm Security Administration will be less needed.

I have written the foregoing in the first person, but I am thinking of others too. In the postwar world American farmers are destined to face increasing competition. The competition will be between American crops and livestock and foreign crops and livestock for the world market and also on the American market between farm products and synthetic products, such as cotton versus rayon, alcohol from grain versus alcohol from sawdust. Prices must be

competitive to keep foreign production or substitute products from taking the market. And in some areas farming may become unprofitable.

The plan I have suggested provides for price adjustment to meet competition, but it also slows the impact of falling prices on the individual, giving him time and also training and opportunity to find other employment when such becomes necessary. It would reduce the burden on the federal treasury and would tend to provide an equality of income without regimentation.

*An Honorable Mention Paper*

A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING:  
AN INSURANCE PRICE SYSTEM

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1. An appropriate peacetime agricultural price policy for the United States would be one which (a) specifically refrained from governmental manipulation of domestic *market* prices, leaving these to move freely one in relation to another, in relation to nonagricultural prices, and in relation to corresponding international market prices; (b) addressed itself directly to the heart of the matter, which is governmental protection of farmers against periods of unbearably low level of income; and (c) avoided an uneconomic allocation of national resources to farming as compared with other activities or to one type of farming or product as compared with other types.

2. Such a policy presumably could not be inaugurated until existing governmental commitments—market-price support to farmers for two years after the close of the war—had been fulfilled. The necessary groundwork, however, could be prepared in the intervening years.

3. Traditional agricultural price policy (if regarded as permanent peacetime rather than emergency policy) presents the nation with a series of unpalatable and intolerable dilemmas. The basic effort is to elevate domestic *market* prices of farm products in such degree that farmers or their political representatives will be satisfied with the income resulting from the elevated prices. In short, the basic effort is to *guarantee farm prosperity chiefly through governmental manipulation of market price*. So far as such manipulation is successful, domestic prices of farm products normally or potentially produced in excess of domestic requirements are brought above a level permitting unsubsidized exports, and also above a level permitting maximum domestic absorption. By governmental elevation of market price, the country is priced out of the international market, while at home the farms tend to be priced out of the domestic market. Failing export and domestic subsidy, the govern-

ment must purchase and hold ever-increasing stocks, unless it can reduce domestic output to such levels that surpluses no longer emerge. While the United States remains or is thought likely to remain out of the international market, output in competing foreign countries is encouraged. This, as well as the holding of stocks domestically (so long as the commercial world continues to suspect that such stocks, whatever their magnitude, may suddenly be dumped on the markets), tends to depress international prices. Accordingly, the government is inevitably driven towards (a) subsidization of exports, (b) subsidization of domestic consumption, and (c) restriction of domestic production either unilaterally or in concert with other nations under international commodity arrangements. But subsidization of exports is unwelcome because it tends to worsen international relations by prompting competitive subsidization and erection or elevation of import barriers; and restriction of domestic output is unwelcome because it involves a degree of direct governmental intervention in farm management highly distasteful to a democratic society. Only subsidization of domestic consumption is reasonably tolerable, and this within limits and because of public conviction that national health may be enhanced thereby.)

4. Continuation of the traditional agricultural price policy into the post-price-support years thus means protection of farm income at the heavy cost of domestic and international regimentation. The present course of policy is set towards an increasing degree of regimented reduction of output at home coupled, in all probability, with domestic maintenance and elevation of trade barriers in the form of tariff duties and import quotas. This course is utterly inconsistent with other accepted policies of international economic collaboration, the maintenance of a peaceful world, and an expanding world economy. Thus the fundamental question at issue is whether or not farmers can be accorded a legitimate degree of protection against income hazards without recourse to policies and procedures which adversely affect international trade, peaceful international relationships, and world economic expansion.

5. It must be admitted that farmers have a just claim against the state for legitimate protection against hazards of low income. This proposition would not have been admitted as valid thirty or forty years ago. But in the interval the public conviction has become established, not only in the United States but also in other economi-



cally advanced nations, that the state owes its citizens (including farmers) a degree of economic security much exceeding what was accorded under policies close to *laissez-faire* but surely falling short of guarantee of perpetual prosperity.

6. The major hazards of income faced by individual farmers are those of the accident of abnormally low yield and those of the incidence of abnormally low price, or both in combination. The view here advanced is that farmers have a legitimate claim against the state for insurance against both of these major hazards. Their claim is legitimate not because farmers are peculiarly important or meritorious as an occupational group, but because they are citizens and as such are entitled to a degree of social security which cannot be provided solely by their own efforts.

7. Specifically, it is proposed here that federal agricultural price policy be based upon a system (a) of governmental insurance against abnormally low yield, and (b) of farm-income subsidies, paid (when the occasion for payment arises) from general funds of the Treasury, in the form of direct compensation to producers of selected farm products, as insurance against abnormally low price.

8. In this paper nothing more is said about governmental insurance against abnormally low yield, since this does not bear upon the question of *price* policy. Nor is it necessary to elaborate upon possibly acceptable devices of affecting market prices favorably to farmers by subsidization of domestic consumption, as exemplified by the school-lunch or blue-stamp or similar programs. These may be regarded as peripheral and supplementary, each to be appraised on its own merits.

9. Briefly, the "insurance price system" might be implemented as follows by federal statute:

(a) The government announces its commitment, indefinite in term, to pay to primary producers, for the "normal marketings" of a year's production, the difference between an absolute insurance price and the average annual market price at the farm whenever the absolute insurance price exceeds the market price at the farm.

(b) A "Farm Price Insurance Fund" is appropriated from general revenue and made available for financing the insurance price system.)

(c) By statute there is first established for each included commodity an "insurance price range" expressed in terms of percentages of parity price. Let it be assumed that the statutory insurance

price range for any commodity is fixed at 65-80 percent of that commodity's parity price, this range to endure until such time as revision of the statute occurs.

(d) By statute the Secretary of Agriculture is empowered (i) to determine and announce an "absolute insurance price" for *each* insurance year in advance, this to fall within the statutory range of 65-80 percent of the parity price of each included commodity and, like parity price itself, to be expressed as average national farm price; (ii) to ascertain the number of units of any commodity to be regarded as a "normal crop marketing"; (iii) to ascertain the normal share of each producer, measured in marketed units, in the aggregate of the normal crop marketing; (iv) to calculate for the insurance year (perhaps on principles specified by statute) the actual national average farm price; (v) to ascertain whether or not the announced absolute insurance price exceeds the national average farm price; (vi) if so, to determine the per unit amount of the excess, to reckon the insurance payment in terms of excess multiplied by the number of units in normal crop marketings, and to calculate the sharing of the insurance payment among producers according to their predetermined share of the normal crop marketing; and (vii) to distribute, or order the distribution of, the insurance payments to individual producers from the Farm Price Insurance Fund.

(e) In order to provide farmers currently with income from insurance payments in years when actual market price at the farm is definitely known to be running below the announced absolute insurance price, the Secretary of Agriculture should be empowered by statute (i) to proclaim the existence of an "insurance year"; (ii) to estimate prior to the seventh month of the insurance year the probable per unit insurance payment for the year; and (iii) to extend to banks making loans to claimant farmers on the security of evidence of their share in the normal crop marketing a guarantee of repayment of loan up to one-half of each borrower's attested claim for insurance payment.

10. The difficulties are minor and technical that might be expected to arise with reference to definition of "normal crop marketing," of "shares of producers" (or farms) in normal crop marketings, of "absolute insurance price" after the range of insurance price had been established by statute, of actual "national average farm price," or of "insurance years" for the several included farm products.

The major problems would arise not administratively, but in the writing of the statute: (a) the selection of commodities to be included, (b) the fixing of the statutory range of insurance price for each included commodity, and (c) the size of the appropriation necessary to establish the Farm Price Insurance Fund. These are interrelated problems; for the wider the selection of commodities included and the higher the absolute range of insurance price, the larger would be the necessary annual expenditure from the Fund (annual average farm price taken as a constant). It should be observed, however, both that no payments would be necessary in years when actual market price of each included commodity equaled or exceeded absolute insurance price, and that in some years payments might be necessary on a few commodities but not on many or all.

11. With respect to commodities included, all significant contributors to farm income, whether crops or livestock and its products, could be covered. It is true that administrative work would increase with the number of items covered; but this is not a compelling reason for initial selection of very few. Wide inclusion is made possible by the concept of basing insurance price payments upon normal crop marketings, because this concept immediately eliminates the problem of administrative differentiation between feed and seed on the one hand and marketed products on the other. The farmer who normally produced corn solely for sale would have a claim to insurance price payments for marketed corn but not for hogs or cattle fed on his corn by some other producer. The farmer who normally produced corn wholly for feed on his own farm would have no claim for insurance price payments on corn but would have a claim for insurance price payments on the marketed hogs and cattle fed on his corn. Normal marketing practices, in short, would determine the nature of any farmer's claim to insurance payments. Of two farmers normally producing equal quantities of corn, one might have large claims to corn payments and small claims to hog payments, while the other might have small claims to corn payments and large claims to hog payments. Except as administrative work on farm products contributing very little to farm income seems undesirable. The insurance price system ought to cover the widest possible range of products on the principle of extending benefits to all, the farmer who normally markets a variety of products

and the farmer who normally markets only one could then share equitably in the benefits of the insurance price system.

12. With respect to the statutory range of insurance price, the range actually set might be anywhere from well below parity price to approximately the parity-price level. The obvious danger of setting the range at about parity level for each included commodity is that thereby farming might be made so attractive an occupation that national resources of labor and capital would be attracted to it (or retained in it) in undue degree. The effects of this would be to expand production and export surpluses, to depress domestic and international prices, and to enlarge the annual expenditure from the Fund. But full parity price could not objectively be regarded as an appropriate level of insurance price, first because parity prices represent historically a price level abnormally favorable (in peacetime) for farm products, and second because no insurance system such as is suggested here can properly be designed to permit claimants to recover full or desired values. Yet parity prices could be accepted as useful guides to the fixation of insurance prices. If for each included commodity the statute should specify the insurance price as 65-80 percent of the parity price, it would accord to farmers what they may legitimately claim of the state—protection against unbearably low levels of income but not guarantee of prosperity. Insurance prices set at such levels could have no appreciable influence in determining the allocation of national resources between farming and nonfarming. The effect would be to put a floor, but not too high a floor, under farm income; but there would be no floor under farm price.

13. With respect to the size of the initial appropriation for the Farm Price Insurance Fund, it seems reasonably probable that \$3 billion would suffice with levels of insurance prices set by statute at 65-80 percent of parity. No calculation, however, could be an exact one unless it should become possible to forecast the relationship between parity price and actual market price. In any event, supplementary appropriations would be possible if, in the course of operations, this sum proved to be inadequate; and after a year or two of experience the insurance price system might be revised with particular reference to levels of insurance prices in relation to burdens on the Treasury.

14. The objection may be raised that establishment of insurance

prices for each of many farm products might tend to stimulate uneconomic emphasis on production of some items as against others. It has been suggested above, however, that only a *range* of insurance price be specified by statute, and that latitude be given the administrator to designate each absolute insurance price, one year at a time, within the statutory range. Reasonably wise administration, which must be assumed, could be counted upon to minimize uneconomic allocation of national resources to some products as compared with others.

15. It will be observed that no provision has been suggested to favor small (low-income) farmers as against large (high-income) farmers. Each would share in insurance price payments according to his contribution to normal crop marketings. The proposition is here advanced that equalization of individual incomes, so far as it may be espoused as national policy, can be sufficiently achieved through the familiar mechanism of the graduated federal personal income tax.

16. The agricultural insurance price system proposed above has, as compared with traditional agricultural price policy, the outstanding advantages of being consistent with an international policy toward greater freedom of international trade and peaceful international relationships, and with a domestic policy of maximum freedom of individual enterprise. The insurance price system would have the conspicuous effects of removing government from the business of purchasing commodities, holding stocks, managing exports, and restricting production, and of allowing prices of farm products to move unhampered in relation to corresponding international prices and domestically in relation one to another. Both international and domestic absorption (the surest cure of surpluses) would be facilitated in periods of low market price. A gradual reduction of barriers to imports would be feasible without arousing political opposition, assuming statutory insurance price ranges to remain substantially unchanged. The allocation of national resources to agriculture as compared with other occupations would not be made uneconomic unless the levels of statutory insurance price range should be set too high, at or near parity price; but where these would be set could be determined only through Congressional debate. The allocation of national resources as between agricultural products would not be made uneconomic so long as administrative officials were allowed to fix absolute insurance price

within a moderate range, and so long as a reasonable degree of administrative competence can be assumed (as it must be in any interventionist policy). Administrative difficulties need be no barrier to adoption of the insurance price system; presumably these would indeed be less than under traditional price policy and would involve a smaller administrative personnel. Farmers would no longer be subjected to the regimentations involved in production controls. The burden upon the Treasury would not be excessive unless the enabling statute should set the range of insurance price too high—again a matter for Congressional debate. Income from farming would be made more stable in the sense that the depth of troughs would be lessened. Finally, the insurance price system would be capable of according to farmers a degree of economic security which they may legitimately claim of the state; operations of the system would not result in inequitable benefits as between farmers; and sharing in the benefits of the system would be optional. Thus the insurance price system here proposed meets the criteria of an agricultural price policy that is consistent with economic progress, and that will promote adequate and more stable income from farming.

18. Whether or not adoption of an insurance price system is politically feasible is a matter of opinion. Although its adoption would mean discard of most features of traditional price policy as established in legislation, no one can assert with assurance that traditional price policy is also immutable price policy; and in fact it cannot be immutable if current announced policies of international economic collaboration are to be pursued. Adoption of an insurance price system and discard of the traditional agricultural price policy could occur, as any major change can occur, if accorded sufficient public, legislative, and administrative support. The test might well come during the next two years or more, during which no alternative seems open but to continue on the road of agricultural market-price support by traditional methods.

19. The proposed insurance price system could not be rejected as unconstitutional.

A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING

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FARM price policy in the United States has become nationalistic with little relationship to world agricultural prices. As a result, this disparity between domestic and world prices is beginning to pose a dilemma for American farmers. On the one hand if United States farm prices are above those of other surplus producing countries, exports are discouraged. At the same time a higher level of United States prices attracts imports of competitive farm products in the face of domestic surpluses.

At the present time the United States is on an import price basis for most of the principal agricultural products—that is, prices in the United States exceed those of foreign surplus areas by more than the amount of the import duty. The possible 50 percent reduction in the present import duties on agricultural products under the 1945 Trade Agreement Act extension would widen still further this price disparity, as would the pending bills to revise parity, e.g. H. R. 754 and S. 507. Should the duty reduction authority be widely used and either parity bill be enacted the United States would go onto an import basis for practically every agricultural commodity unless strong measures were taken to control imports.

For the time being the demand situation both at home and abroad, shipping availability and limited world supplies obscure the basic effects of these price level disparities for both exports and imports. For the post-war period, however, the price level relationships cannot be ignored. In fact United States-foreign price disparities appear to offer a starting point for consideration of a new and longer-time price policy. Unless our farm price policy can meet the test of coordination with a foreign trade policy, the United States is threatened by a still greater dilemma of economic isolationism versus political internationalism.

*Alternative Courses of Action**1. Parity Prices with Price Support*

Without a doubt the maintenance of parity prices would be popular with farmers. It would have the advantage of continuing the present price relationship with labor rates, taxes, costs of things farmers buy, and other factors in the price economy. It would maintain farm income through the regular price structure. It is the method currently in operation and supported by existing legislation, a fact that will favor its continuance.

On the other hand if farm income is to be regulated largely by the price level, a system of foreign trade controls will become imperative as price disparities develop. For commodities in surplus, subsidies will be needed both for special use within the United States and for export. Processing taxes or special appropriations by Congress to meet the losses incurred will be necessary. Such a procedure places the Government in control of agricultural exports and that share of the domestic production not regularly used in commercial trade in the United States. For imports, absolute quotas would need to be established for an increasing number of agricultural products<sup>1</sup> in order to prevent the domestic market from being flooded with foreign surpluses and, as a result, United States prices being forced down or United States price support measures being called upon to support foreign as well as domestic production. Though having a wide appeal, it is obvious that parity prices with price support is definitely a nationalistic policy and should be so recognized.

*2. Competitive Prices and Income Payments*

Before the loan program with price support became an important factor in determining United States agricultural price levels, competitive world prices largely regulated prices and trade in agricultural products. The story of increasing competition from lower cost foreign areas, the sharp fluctuations in price and income from year to year, and the disastrous effect of low prices in the depression years is one that is well known. Any program based upon the possible return to such conditions for American agriculture is ruled out of consideration as being unacceptable.

<sup>1</sup> Import quotas have already been established under Section 22 of the AAA Act, as amended, for the two basic commodities, wheat and cotton.



Looking ahead to post-war agriculture in the United States, however, two general periods may be expected—the one of transition and adjustment from war to peacetime conditions and the other, the longer and more permanent pattern of development. The greatest difficulties are likely to arise in the transition and early adjustment period, but if farm price policy during this period is within the general framework of a more permanent type program, an orderly evolving post-war development can take place. If competitive pricing were adopted as a generally basic principle for commodities in foreign trade, and if such prices were supplemented by additional income payments, at least during the period of transition and basic adjustment, it should be possible to gain the advantages of international pricing and at the same time promote an adequate and more stable income from farming.

Competitive prices with other surplus producers would facilitate export movement and also the use of surpluses within the United States with little or no Government assistance. Labor could have relatively cheap food and consume all it wanted; industry could use more agricultural products for its raw material; consumption, and in turn production, would tend to be maximized and producers would receive an income supplement that would maintain a working parity relationship to other segments of the economy.

Such a program, of course, is not without its problems. One would be the annual appropriation or tax mechanism to provide money for the income supplement payments. Economy waves or political developments could adversely affect the stability of such payments. Present legislation<sup>2</sup> also raises considerable doubt that an immediate shift from price support to competitive pricing would be possible for the agricultural products specifically covered by its provisions and perhaps others. The intent of Congress in such legislation appears quite clear that market prices were to be supported for at least 2 years after the war.

### 3. *A Combination Program*

In view of existing legislation with regard to price support commitments and the desired objectives that might be attained by the policy of competitive pricing and income supplement payments, a

<sup>2</sup> Particularly the Steagall amendment and the basic commodity loan legislation of Section 8 of the Stabilization Act of 1942, and as amended.

combination of the two programs suggests itself. Such a program might include the continuation of price support for the commodities for which, and as long as, it appears mandatory,<sup>3</sup> and possibly for others that are unimportant in foreign trade and might be most effectively handled through purchase programs or other support measures. For other commodities and particularly those entering into international trade, the program might be based largely on competitive pricing and income supplement payments. Further, should a comprehensive program of international commodity agreements be developed in the post-war period,<sup>4</sup> a combination program would have still greater latitude. This is especially true if the partial use of price support measures were desired and the mandatory loan provisions retained.

#### *A Suggested Proposal*

If it is assumed that the United States will move in the direction of active international collaboration with other countries in both the economic and political field in the post-war period, there would appear to be little question about the type of price policy that should be adopted for agriculture. It must be consistent, if possible, with foreign trade policy; otherwise the United States will be in a position of encouraging, if not leading, a move toward increased economic isolationism. In examining the three general alternatives, it appears obvious that the programs for maintaining the price economy for agriculture on a strictly support or domestic basis do not meet the test of a constructive foreign trade policy. On the other hand, certain commodity situations, as well as existing legislation, would appear to preclude a general adoption of competitive pricing with income payments at this time. The a priori method of approach to the problem of "a price policy for agriculture, consistent with economic progress that will promote adequate and more stable income from farming" leads to the conclusion that it should be a combination type program—price support for such products as are legally required or can most

<sup>3</sup> The six basic commodities: Wheat, corn, cotton, tobacco, rice, peanuts (for nuts) and also the so-called Steagall commodities: Hogs, eggs, chickens (with certain exceptions) and turkeys, milk and butterfat, dry peas of certain varieties, dry edible beans of certain varieties, soybeans for oil, peanuts for oil, flaxseed for oil, American Egyptian cotton, potatoes, and cured sweetpotatoes.

<sup>4</sup> An inter-American Coffee Agreement, also an International Memorandum of Agreement for Wheat are already in effect and international discussions on cotton have been taking place recently.

effectively be handled by this method and competitive pricing with income supplements for the bulk of the remainder of agricultural production. Such a program could have many of the broader objectives carried out in a variety of ways.<sup>5</sup> Brief comments on the main features follow.

### *1. Administration of Program*

A combination type program would permit flexibility and adaptability to commodity and regional problems, which are so necessary in the United States, with its many agricultural regions and wide variety of crop and livestock production. The program could be administered largely by existing<sup>6</sup> agencies and field offices, particularly state, county, and community committeemen. These committeemen have been handling such activities as local approval of dairy feed and beef cattle subsidy payments, the authorization and approval of many conservation practice payments, and similar administrative activities. It is also proposed that the program be combined with the present AAA conservation payments. In this way there would be one general Congressional appropriation for conservation practices and income supplements and one administrative organization already functioning to handle the job. Conservation practices and income supplements are basically allied in maintaining and strengthening the farm economy.

With regard to financing, annual appropriations would be based upon a program developed in the public interest. The protection of land resources is a permanent defense type program, while payments to farmers in lieu of higher prices to the public, especially in the adjustment or reconversion period, are only a form of price and should be so recognized. The monies spent on agricultural conservation during the past decade have paid real dividends in food production in the war period. Recent state surveys of conservation needs, especially for the next 5 years, have been challenging. Furthermore, such a program would benefit every one of the 48 States to a significant extent during the coming years, a

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<sup>5</sup> Few details are given in this statement because of the need for brevity.

<sup>6</sup> Proposed reorganizations in the Department of Agriculture, especially of CCC and AAA should further facilitate the effective handling of this type of program.

feature that should favor both the adequacy and the stability of the appropriations.<sup>7</sup>

Once the appropriations were made to the Department of Agriculture, the monies would be distributed through established administrative procedure to the respective states which in turn would make payments to farmers. The formulae now used in allotting conservation practice monies to states could easily be revised to include monies for farm income payments. In addition to the present application by farmers for conservation practice payments, a record of farm production with information on sales, costs, etc., would also be included. The farmers' application, after examination and endorsement by the local committeeman, would be forwarded to the state AAA or fiscal office where established rates for conservation practices and income supplement payments by crops would be used to compute the total payment to farmers. Crops for which support programs were in effect would have little or no income supplement.

## *2. Parity Revisions*

The concept of developing parity relationships among the various parts of the national economy, such as agriculture, labor and industry, is implicit in the suggested proposal. It would emphasize parity in the form of income and general purchasing power, and it would provide for adjustments and sufficient flexibility to reflect changes in cost and demand conditions for any farm commodity. At the same time it is recognized that Congress has already enacted certain parity legislation, and that there is a considerable legislative record and established opinion on parity to be taken into account. Two courses of action appear possible with respect to parity revision: (1) scrap existing legislation and revise the parity concept, and (2) amend present parity legislation. The latter method, with a minimum of revision, is suggested at this time as the more likely to produce timely results.

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<sup>7</sup> In case of inadequate appropriations or if directed by Congress, it should be possible to raise part of the monies through individual commodity self-financing programs, e.g., wheat certificate plan, etc. Should the appropriations exceed the amount needed to assure a parity farm income, due to above normal yields or high market prices, Congress could direct the disposition of such monies. When budget estimates must be submitted well in advance of the year to which they apply, normal yields and prices would probably be assumed.

Recognized problems with existing parity legislation and procedure include the inflexibility of the formula as written, the inequities among commodities when a fixed base is used and the changing position for many commodities since 1909-14, particularly with respect to technological developments in production and shifts in market demand. In order that the difficulties may be more satisfactorily met, it is proposed that Section 301(a) of the Agricultural Adjustment Act of 1938 be amended to include changes in conditions of production or consumption as additional factors in determining parity relationships with the 1909-14 base period or in selecting a new base period. For the purpose of reviewing and revising parity prices or income relationships as needed, a Parity Price Board would be established.

The amendments should go a long way toward making it possible to cut the Gordian knot of a fixed price base with fixed relationships among the individual commodities. Parity relationships both price and income should be kept under constant review, and this would be a primary function of the Parity Price Board. It would make studies and investigations, also hold such hearings as necessary before making revisions in a base period or parity relationship. A great deal of progress could be made in adjusting commodity parity problems, and in turn, formulating programs for the early post-war period before the impact of adjustment would be calling for emergency action and controls, were the Board to be formally established within the next few months. It would relieve Congress of a very thorny problem, at an opportune time, yet Congress would retain ample control over all authority delegated to the Board by virtue of the annual appropriations required for parity income payments. Should Congress also decide that general stabilization activities for the national economy be continued in the post-war period, i.e. maintenance of general parity income relationships among labor, agriculture and industry, the Parity Price Board for agriculture could become a working part of such a national program.

In determining parity income payments for farmers, the individual commodity parity figure, yields, market prices, conservation activities, and special regional factors would be considered. An income payment program permits flexibility of procedure and simplifies the administration of many individual commodity parity problems. For many commodities the supplemental income

might well be in the form of acreage or conservation practice payments in lieu of a price payment. Revisions in commodity parities resulting from changes in market demand or technological developments affecting costs would also affect parity income and assist in implementing adjustment programs. Expanding demand that requires additional incentives for production would call for some upward revision in the parity income for that commodity.<sup>8</sup> Yields are a very important factor in farm income and would be taken into account in making payments—either deviations from normal or the use of normal yields provides a measure of income assurance and stability for farmers. Regions likewise have differences in costs and in the parity income relationship of agriculture, labor, and industry. Where important variations were noted, this fact could be readily taken into account in establishing farm parity income.

### 3. *Consumer Benefits*

There are several ways in which the suggested program emphasizes increased production and benefits consumers as well as producers. Consumers and industry benefit from price levels that encourage a maximum utilization of agricultural production. The possibilities of the expanded use of food products have been well shown during the war period. The problem of adjustment of production to post-war requirements will be greatly aided if consumer demand can be satisfactorily maintained, particularly for such items as meat and dairy products that involve extensive acreages for feedstuffs. Likewise, should prices permit the continuation of the use of significant amounts of products such as grain for alcohol for synthetic rubber or other industrial uses, the demand for agricultural production would be still further increased.

Producers are also consumers. A considerable part of the farm population has a very low standard of living. An increased farm income and the stability it affords, should greatly aid in improving the consumer position of such farmers. Not only can farm consumption be expanded considerably for many products but the farmer's ability to buy other agricultural products in the form of

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<sup>8</sup> Such a revision in income might be effectively obtained by revising the commodity parity price or by including an incentive payment for increased production as part of the farm income supplemental payments.

food, textiles, etc., can be increased—a development that would help the social and economic position of the country generally. A healthy agriculture will also contribute greatly toward maintaining a high level of employment in industry through its ability to buy the products of industry. Again, consumers should benefit in many cases from adjustments made in parity prices and income supplements resulting from technological gains or changes in market demand.

#### *4. International Relations*

The suggested proposal should greatly assist in the development of a constructive foreign trade policy in the post-war period. Together with other measures already adopted<sup>9</sup> the United States could effectively cooperate with other nations in efforts to expand trade, improve economic and social conditions and raise living standards generally. The trend of farm prices especially of the major commodities in other surplus producing countries is expected to be mostly upward during the post-war period. Varying degrees of inflation, increased labor costs, and a generally rising standard of living should help to narrow some of the present commodity price level disparities between the United States and other surplus agricultural producers. Likewise, negotiated prices in international commodity agreements should strengthen prices through stabilization—dumping prices would be eliminated. As a result, the level of competitive pricing may rise and in turn the amount of income supplement payments could be reduced or largely eliminated over a period of time. Meanwhile in the important transition and early post-war period ahead, American agriculture under the proposed program of competitive pricing and income supplements, with support prices where necessary to carry out commitments under existing legislation, would have “a price policy consistent with economic progress that will promote adequate and more stable income from farming.”

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<sup>9</sup> E.g., The Bretton Woods Monetary Plan, the United Nations Charter, the renewal of the Trade Agreements Act and the Food and Agriculture Organization.

A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING

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LIKE the nation's entire economy, American Agriculture is headed for conversion from production for war to a production that must satisfy a very different domestic and foreign peacetime demand. Technological progress will continue unabated. It will make human labor more productive, and at the same time will tend to curtail the number of people employed in agriculture. Thus competition among farmers will become keener. The domestic demand for food and fibers will change in quality and volume for all products. Furthermore, America's farmers will encounter strong competition in the world market for their export products.

If transition to these very different conditions is not to lead to a serious agricultural depression and ensuing disturbances in industry, the federal government must pursue a policy of assistance to agriculture that is realistically devised and can be constructively executed. The farmer needs help in adjusting his production methods, costs, and output quickly to the changed demand if he is to succeed in providing the American people with abundant supplies of food and fiber at low cost, and keep in step with progress in agricultural efficiency elsewhere in the world in order to increase the national income by competitive farm exports.

In our free economy it is the farmer, in the last analysis, who has to make the adjustments. The government cannot and must not try to relieve him of this responsibility. Yet we realize certain political and social obligations to protect him against disastrous sudden losses in income arising from unpredictable price collapses. Whatever public planning is necessary to give this support must seek to strengthen the free private economy and must specifically refrain from advocating policies which would immediately or in the long run replace it by regimentation.

The present parity price support scheme will not protect the



farmer from severe losses in income, nor aid his adjustment from wartime to peacetime farming. The scheme is politically convenient, but it ignores the profound economic changes that have occurred in production and consumption, at home and abroad, over the last thirty years. Its continued use will lead either to the loss of all our export markets and radical curtailments of production, or to a two-price system in which consumers at home will be charged high prices while the same products will be dumped on the foreign market at low prices. Each of these results is detrimental to our national welfare, and each requires the regimentation of production.

Under the parity price system such vast surpluses of food will accumulate that either the price support policy itself will collapse and wreck the market, or quota restrictions on production and marketing will be imposed. The people of America, including the farmers, repudiate the notion of an economy of regimented scarcity; politically it contradicts all the tenets of American democracy, economically it wastes the great asset of opportunity to create abundance, and socially it discriminates against the weakest groups.

The parity price formula affords no protection against excessive income losses, because it ignores entirely the volume of production sold at the supported price. Therefore no "revised" parity price formula can possibly meet the critical needs of American agriculture in its reconversion to peace.

Therefore a policy is proposed which (a) underwrites from year to year a certain minimum farm income in order to cushion the shock of sudden and unpredictable declines in prices, without consideration to the individual crop yield hazard; and (b) that assists farmers to plan production by establishing price floors and production goals as guideposts to obtain the best possible income.

In discussions of this Equitable Farm Income Insurance Plan, "equitable farm income" shall be defined as the income from the market sale of an equitable volume of specified basic farm products at an equitable price. The "equitable volume" (or goal) shall be defined as that volume which can be absorbed in the market without leaving burdensome surpluses or serious shortages. The "equitable price," i.e., the insurable price floor, shall be defined as that price which promises to produce the equitable volume. heretofore defined.

The proposed Plan does not interfere with the market or with production by intervention or price-fixing of any sort, but is actually a scheme which concerns only two parties—the government as the underwriting agency, and the insured producers. It confines itself to a certain yearly minimum farm income insurance, and grants farmers a reasonable degree of economic security, which will also prove beneficial to industrial employment by underpinning the purchasing power and effective demand of farmers for industrial goods. The farm income shall not be insured on any basis of the past but according to the immediate future needs of the nation.

Because this Plan leaves the prices in the market free to find their level according to supply and demand, the domestic consumer will have the full benefit of a large supply. The farmer, in turn, will profit from the absorption of his products by both the domestic and export markets.

The Plan envisages the following basic measures: First, the Congress shall enact legislation assigning to a non-partisan Board of perhaps 12 members (appointed by the President and confirmed by the Senate) the task of administering this federal insurance of an equitable farm income at public expense. The Board shall be given power to establish always for one crop year specific production goals and price floors for certain basic crops, livestock, and animal products. Both goals and price floors shall be merely guideposts for the farmers and statistical tools for the Board to estimate the insurance of an equitable farm income. The price floors shall be immaterial for the market of such commodities. The commodities shall be sold freely at whatever price they will fetch.

When equitable prices are determined, the chief emphasis shall be laid upon the proper price relations between competitive commodities, because these relations will be a more powerful guiding device for production than the specific price level as such.

Since this task of determining goals and price floors to assure fulfillment consists of objective economic decisions, it can be kept free of political considerations. Since the Board shall be bound to set goals at such levels as to avoid shortage and surplus, it must ultimately conform to the decisions and preferences people express in dollars and cents in their daily plebiscite.

The Board shall announce the price floors not later than August 1 of each year, in order to give the farmers opportunity to shape their crop plans accordingly.

The Board shall estimate the total risk of underwriting the price floors and report to the Secretary of the Treasury the maximum amount of funds needed to pay the "equity" to farmers, i.e., the indemnity for an income from insured commodities at prices below the insured price floors.

The Secretary of the Treasury shall ask the Congress for an allocation of funds sufficient to pay the indemnity. This fund shall serve exclusively as an insurance fund. Whatever remains of it after indemnification at the end of a crop year shall revert to the general treasury. The annual fund will be used approximately two years after allocation by the Congress, since allocation must be made before goals and price floors can be announced, while payments will be made at the end of the second year, when the crops of the preceding year have been sold.

All dealers in agricultural commodities shall be obliged by law to issue sales certificates in triplicate to farmers concerning the sale of any commodities for which the government underwrites a price floor. Such certificates shall state the name and address of the producer and the buyer, the quality and quantity of the product, and the price at which it was sold. The original and second copy shall be given to the farmer, the third copy to be retained by the dealer.

The Board shall collect all original sales certificates and determine the volume, the average actual price per unit received by the farmers, and compute from them the total income actually obtained from each commodity. If that income is found to be below the insured equity income, the Board shall determine the difference in percent of the insured sum and pay all certificate holders that percentage of their actual receipts from sales as indemnity.

<i>Example</i>	
Goal.....	1,000,000,000 bu. of wheat
Insured equitable income price.....	\$1.00 per bu.
Insured income.....	\$1,000,000,000.00
Actual sales.....	1,200,000,000 bu. of wheat
Average price.....	\$.80 per bu.
Actual average income received from sales.....	\$960,000,000.00
Equity.....	\$40,000,000.00=4.1 percent of actual income

Each holder of sales receipts will obtain a cash payment of 4.1 percent of the value shown by his receipts.

A given farmer thus may sell 1,000 bushels of wheat, actually

receive \$.60 per bushel for it, or a total income of \$600.00. The income insurance due him would then be \$24.60.

The plan requires far less government personnel than the parity price policy now in force. The Board would need a planning staff to determine the equitable prices and the goals. Much of the necessary economic analysis could be delegated to the Bureau of Agricultural Economics and other offices in the Department of Agriculture. The collection and calculation of the certificates and payments demand an efficient accounting staff.

The Plan's best feature is that it neither subsidizes overproduction nor diminishes the producer's incentive to reduce his costs or to sell at the best price he can get in the market. As the example suggests, the equity payment per bushel declines the more the goal is overshot, since the Plan insures the general farm income from a commodity, and not a definite price emancipated from volume of production.

It is therefore probable that in the case of a bumper crop, the insurance fund will be spared a heavy drain, although the market price would decline below the floor. This, however, is as it should be. The lowering of the market price has the advantage that it permits a maximum utilization of the crop, eliminating the necessity for huge government carryovers of stocks, and that it makes it plain to producers that a smaller crop may yield a better net return.

On the other hand, the plan does not interfere with a granary policy if the government desires to accumulate stocks. Such purchases would lift the market price, reducing or eliminating the equity payments to farmers.

The Plan does not interfere with technological progress. If farmers manage to produce at lower costs, they derive the full benefit from it. If all farmers substantially overshoot the goal, owing to better production methods for one commodity and thereby lower the market price far below the floor, the insurance fund is still relatively well protected by the provision that it insures only the total income from a commodity for one year. The Board in such a case would naturally lower the insured price the following year.

As in the case of all insurance, the Plan involves a certain risk for the government in underwriting a certain income. The risk element lies in errors of judgment by the Board. The Board may

err when it sets either the goal or the insured price. However, the Plan has a great advantage over the present price support policy in this regard. Such errors can never have the financial consequences for the government that are now entailed, because the insurance of prices for several years in advance on a historical basis is a rigid commitment without any safeguards. In this connection, the extent of financial obligation under the Plan can be computed within reasonable margins and can be revealed to the public. On the other hand, the needless loss to consumers who have to purchase in a market with quota restrictions and pegged prices is not calculated or made public, to say nothing of the net loss in real income incurred by the producers of agricultural products in the loss of exports and increased overhead costs owing to restricted output.

The greatest misfortune that can possibly befall agriculture under the Plan would be a combination of factors in the world market that caused the price of one or several commodities in one crop year to fall to a level of, say, half the price floor. If this were to happen, the government would be faced with an agricultural crisis in any event. It would have to adopt a stop-disaster action program. To avoid payment of an excessive indemnity, it would probably purchase a sufficient volume of the commodities in the open market to check the price decline.

The direct costs of the Equitable Farm Income Insurance Plan to the taxpayer will be far lower than those incurred under the parity price policy, which looks to the past. Indirectly, the Plan would create a substantial net balance in favor of the taxpayer, because by its year-to-year orientation to the future it would lead to a self-adjustment of agricultural production, a curtailment of food and fiber costs, and a prosperous export trade, instead of the permanent subsidization of production oriented at prices 30 or 20 years old.

The plan should be made effective upon the expiration of the present standing commitment of the Congress enacted in the so-called Steagall Amendment, so that as soon as the support policy of parity prices or comparable prices ceases, the equitable income insurance will begin.

A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING

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THE GRAND objective of agricultural price policy since 1933 has been the achievement of that relationship which existed between individual agricultural commodity prices and all other prices from 1910-14. The mechanics of achievement have varied, and the base period has been redefined for certain commodities, but the quest for the current realization of a favorable historical price relationship has never faltered. Within the framework of this policy prices have come to be regarded primarily as *implemental tools for the maintenance of income*; the function of the price system as a mechanism for directing continuously and efficiently the use of productive resources to meet changes in consumer demand and changes in production techniques has been reduced to a subsidiary role.

The parity concept as applied to individual commodities is unsatisfactory in that instead of fostering basic shifts in agriculture to meet new circumstances, it tends to remove the incentives for adjustment and perpetuates, even accentuates, fundamental maladjustments. A series of measures are proposed in this paper designed to encourage agriculture to change with the times, to minimize the human suffering involved in making adjustments, to minimize the actual size of the adjustments required, and to sustain farm incomes at a level comparable with those received in alternative occupations. The proposals, moreover, will benefit all consumers, particularly those in the lower income brackets.

*The Function of Prices*

Inasmuch as a governmental price policy for agriculture will be proposed in this paper, it should be worth while to review very briefly the operation of the price mechanism. Looking at the question from the standpoint of the individual, it is evident that the prices which a producer receives for his product, taken with the prices he must pay for the goods and services which go into its

production, that is, his costs, are the major determinants of his money income. What this money income is worth in terms of other goods and services depends in turn on the prices of these items. The importance of prices as real and money income determinants is widely understood because it touches closely the everyday task of making a living. It is this concept of prices which underlies the present parity price policy for agriculture.

There is another function which the price mechanism performs, however, which is not well understood. In a free enterprise economy prices are the signals which tend, through their direction to producers and consumers, to equate the quantity of a commodity produced with the effective demand for it. A high price for a particular good serves notice to producers to direct, if possible, more energy and resources into its production, and conversely, warns consumers that it is scarce and to use less. Similarly, a low price stimulates greater consumption of the product and at the same time discourages its production. This equilibrating function of prices is blocked, however, by the parity formula, since the formula does not take cognizance of changes in demand on one hand and changes in supply on the other.

### *Parity Prices Examined*

The income maintenance aspects of agricultural price policy have been paramount in recent years and have dominated most wartime legislation concerned with farm prices. The Stabilization Act of 1942 and consequent amendments provide that farm prices for the basic commodities (corn, wheat, cotton, tobacco, rice, and peanuts for nuts) shall be supported by producer loans at 90 percent of parity, except cotton which shall be supported at 92½ percent of parity (except with respect to cotton harvested after 1943 but planted before 1945, 95 percent of parity). Moreover, the Government has committed itself to support the prices of basic commodities for at least two years after the war. With respect to the Steagall commodities (those commodities for which the War Food Administrator has requested an expansion for war purposes) the law also provides for price supports for at least two years after the war, at not less than 90 percent of parity or comparable price.<sup>1</sup>

Now placing a price floor under the principal agricultural commodities at 90 percent of parity takes no account of the demand

<sup>1</sup> For a succinct discussion of agricultural price support legislation, see the paper by Robert H. Shields entitled *Federal Statutory Provisions Relating to Price Support for Agricultural Commodities*, U.S.D.A., 1944.

for particular commodities and the question may be asked—Is the heavy current demand for food, domestic and foreign, likely to fall off sufficiently within the two years following the end of the war so that the Federal Government will be required to make good its commitment to support farm prices? It is impossible to give a precise answer to that question. But it does seem safe to assume that the heavy wartime demand for food and fiber will decline significantly with the cessation of lend lease and war-relief feeding regardless of the level of domestic economic activity. If, further, the Federal Government is committed to support agricultural prices at 90 percent of parity at that time, it seems likely that agricultural prices for certain commodities will come to rest at the support level—thereby creating a surplus condition in those commodity lines. Again it is difficult to name specific commodities, but the following seem likely candidates for any surplus list—cotton, eggs, wheat, peanuts, and potatoes.

The above conclusion is based upon the operation of three causal factors, any one of which or some combination of which might be at work in the case of a particular commodity. First, the total demand for certain agricultural commodities in their respective base periods, from which the parity relationship is derived, included a larger volume of exports than is likely to occur in the long-run post-war period (e.g., cotton). Second, in the case of certain agricultural commodities costs of production have declined to a level where it is more profitable to produce the commodity than it was in the base period—thus, more product is forthcoming. Third, farmers are slow to reduce their output as prices decline. Hence, they may well maintain production in an attempt to maintain their incomes, as commodity prices decline to the support price level.

#### *Price Policy Proposed*

With certain reservations and necessary adjuncts, which will be pointed out later, agricultural policy in the post-war period with respect to prices should be *to permit each commodity price to seek its own level*. It necessarily follows then that the Federal, State, and local governments should act to modify their institutions, customs, and practices to facilitate price-equilibrating adjustments. Specifically, this means that the Federal Government should discard the now current parity price formula, and make no further attempt at price-pegging or fixing when the Steagall and basic commodities commitment is fulfilled.



On the surface the above recommendation may appear conservative. And it would be if nothing further were done to insure equality for agriculture with respect to per capita incomes, but such is not the case, for two income stabilizing programs will be suggested as an integral part of the price proposal. It is simply held that the pricing mechanism is so complex and so necessary to the rational use of resources that any tinkering with it is likely to lead to further maladjustments. This is so because the customs and institutional arrangements of related markets are infinitely varied—changes in demand, supply, and price are continually occurring—hence, nothing less than omniscience is required of a price-regulating agency. Further, on the basis of past experience it is clear that a central agency, charged with the responsibility of managing prices in a capitalistic society, would be so pressured by producer groups for special concessions that a rational management of prices would be impossible. Price control must become a political football with those groups aggregating the most power in moments of decision receiving the most advantageous relative prices.)

Even though we as a nation are desirous of regaining the efficiencies that flow from a free market mechanism, most persons are not disposed to return to the *laissez-faire* philosophy of the nineteenth century. There appear to be better ways of effecting adjustments than through starvation on one hand and the amassing of huge fortunes on the other. It is contended that the Federal Government should and must take steps to ease the economic adjustment process (1) by mitigating the economic vicissitudes to which producers are subject and (2) by helping producers effect adjustments. Therefore, it is recommended that two programs or sets of programs be developed as adjuncts to the price policy recommended above:

- (1) A Food Discount Plan designed to raise the level of food consumption of low-income people,<sup>2</sup> and
- (2) a production-adjustment program designed to assist inefficient producers shift into other enterprises or nonfarm pursuits.

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<sup>2</sup> Other programs, such as School Lunch, In-Plant Feeding, and Nutritional Education, should accompany the Food Discount Plan,

*A Program of Consumption-Adjustment*

The food discount idea is not complex. Whenever the income of a consumer unit (families or single individuals) falls to a point where the "normal food expenditure" of the unit is less than the total cost of a good adequate diet,<sup>3</sup> the consumer unit would be sold at discount a food currency book or books sufficient in total value to purchase the good adequate diet. And in no case should the discounted price of the food currency book or books sold to the consumer unit exceed the "normal food expenditure" of the unit. For example, if a consumer unit of four persons with an annual income of \$1,000 spends \$360 per year for food, but the good adequate diet costs \$500, then the consumer unit would be sold a food currency book or books valued at \$500 for not more than \$360, or at a discount of at least 28 percent off the retail value of the books. By this procedure the consumer unit must spend for food an amount equal to the subsidy plus the "normal food expenditure." Hence, the demand for all foods would be maintained at the good adequate minimum regardless of the income status of consumer units.<sup>4</sup> This does not mean that the demand for each food item would be maintained. Such stability would occur only if consumer tastes remained constant. But the total demand for food would be maintained, and thus operate to stabilize agricultural prices—operate to reduce the amplitude of price fluctuations to which agricultural producers have been subjected in the past.

The size of a comprehensive food subsidy program to low-income consumers would vary with the level of national economic activity. If something approaching full employment were realized the program would be modest in size. But as the economic situation darkened, the size of the program would necessarily expand as more and more consumer units experienced low incomes, hence became eligible to participate in the program. It has been estimated, for example, that as of 1950 with a total population of 144 million, and a net national income of 125 billion dollars in 1943 prices, supplemental consumer expenditures for food amounting to 1.4 billion dollars would be required to provide all individuals

<sup>3</sup> Equal in all respects to the "Moderate Cost Diet" recommended by the Bureau of Human Nutrition and Home Economics, U.S.D.A.

<sup>4</sup> This idea could easily be extended to include cotton and wool products.

in consumer units of less than \$1,000 income per year with good adequate diets.<sup>5</sup>

### *A Program of Production-Adjustment*

An agricultural price policy which would permit individual commodity prices to seek their own level should be complemented with programs designed to help producers shift out of production where average variable costs exceed equilibrium prices for the commodities involved. A means or mechanism must be developed which (1) helps producers shift into new enterprises with a minimum of pain and sacrifice, and (2) permits the reduction in costs flowing from technical innovations to be passed on to the consumer in the form of lower prices.

A downward graduated income payments plan is first proposed to assist agricultural producers adjust their operations from a support level to a free market situation. The payments under this plan are designed to provide an umbrella under which production shifts might take place. To compute such an adjustment formula the following data are required:

1. Average physical volume of production of each commodity on each farm for the years 1939, 1940, and 1941.
2. The parity price of the commodity in the current year.
3. A reduction factor—for example, 100 percent for the first two years after the war, 75 percent for the third year, 50 percent for the fourth year, 25 percent for the fifth year, and 0 percent for the sixth year.

The formula for a given commodity, say for the first year after the war might be written as follows:

$$\left\{ \begin{array}{c} \text{base period pro-} \\ \text{duction in} \\ \text{physical units} \end{array} \right\} \cdot \left\{ \begin{array}{c} \text{current} \\ \text{parity} \\ \text{price} \end{array} \right\} \cdot \left[ (.90) - \left\{ \begin{array}{c} \text{pct. of parity of} \\ \text{commodity in} \\ \text{first year} \end{array} \right\} \right] \cdot 100\% = \text{payment}$$

In each succeeding year the then current parity prices, percent of parity, and a new reduction factor would be substituted into the formula.

If the percent of parity of the commodity produced in the base period goes above 90, the producer receives nothing, but if the percent of parity falls below 90 he would receive a payment in accord with the formula. The important point is that the farm operator is encouraged to produce in the period immediately following

<sup>5</sup> Estimates taken from a Ph.D. thesis submitted to and accepted by Harvard University, March 1945, by Willard W. Cochrane, entitled *The Problem of Achieving a High Level of Food Consumption in the United States*.

the war the commodity on which he feels he can make the greatest return, given the equilibrium price pattern and production costs on his farm—he is not tied to the commodity in surplus to receive a benefit payment. If, for example, the world price of cotton should fall to 9 cents and it costs a particular farmer 11 cents to produce cotton, he knows he will lose money in the free market, and it would be to his advantage to shift to some other enterprise. And to provide an incentive the benefit payments do not stop when he shifts—they simply run out with the passage of time. In brief, a cushioning period of five years or perhaps longer is provided to help producers adjust to the free market situation.

It is here that the second phase of the program comes into operation—the rehabilitation phase. If it can be ascertained that the producer of a given commodity, while losing money at the world price, does have some enterprise into which he can shift and there cover all costs including a managerial wage, then the Federal Government through a designated agency should lend money to the producer to enter that field. These loans should be supervised in much the same manner as Farm Security Rehabilitation loans. It is not sufficient to make a loan and return next year to collect interest and principal—these unfortunate farmers would require *patient guidance*, for they in effect would be learning a new trade under trying circumstances.

However, if it is ascertained that in the equilibrium situation a particular producer cannot on his farm reduce his average variable costs below the selling price in any commodity line, then the Federal Government through a responsible agency should stand ready to (1) purchase the farm (if the producer is an owner) at the going rate for that land in 1940, (2) offer to retrain the farmer in a trade school at Government expense—the stipend to vary according to the size of the family, and (3) actually provide the ex-farmer, assuming he completes the prescribed course of training, with a job.<sup>6</sup> Upon the provision of a new job to the displaced operator the Government's obligation would be concluded. The Federal Government is simply assuming the cost of introducing mobility into the economic and social system.

### *Conclusions and Summary*

In this paper dealing specifically with agricultural price policy,

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<sup>6</sup> Here it is assumed that the Federal Government will either (1) create a milieu in which private enterprise will achieve something approaching full employment or (2) create jobs through Government enterprise. For if the displaced farm operators cannot find new employment, the entire program breaks down.

it has been recommended that the monopoly elements granted to agriculture by Government be withdrawn, and that the prices of individual commodities be permitted to seek their own level. It is equally important that the monopoly elements in industry be combated so that monopoly profits arising out of controlled prices cannot arise. Agriculture should not be forced to operate under free market conditions while industry operates under monopoly conditions; such a recommendation would be unfair and unequitable. But because this paper is concerned with agricultural price policy, and because the problem of industrial pricing with differentiated products is so complex, the job of laying down the specifics of a price policy for industry has not been undertaken here.

Further, in addressing this paper to the topic of agricultural price policy a solution has been offered only to the problem of achieving an *efficient and rational* use of agricultural resources; *a cure-all for the ills of farmers has not been concocted*. The carrying out of the above recommendations in the agricultural segment of the economy and those inferred for industry will not assure, for example, full employment or eliminate secular trends in business activity. In short, the formulating and carrying out of a positive price policy does not eliminate the need for a positive policy with respect to fiscal operations, conservation, international trade, and many other related fields.

In summary, the agricultural price policy formulated in this paper has two broad aspects, one negative and one positive. First, the parity price concept adhered to by agriculture since 1933 must be junked, and with it all programs of the price-fixing, price-pegging type. Individual commodity prices should be permitted to seek their own level. Second, two general type programs must be included to mitigate the economic consequence of a free market system: (1) a consumption-adjustment program designed to provide consumers at all times with sufficient purchasing power to acquire the good adequate diet and (2) a production-adjustment program designed to help producers shift (a) into commodity lines for which they are more efficient relative to the pattern of equilibrium prices or (b) into nonagricultural pursuits, when producers discover they cannot cover their costs in their established commodities at equilibrium prices. These added programs will permit the efficiencies that flow from a free market to be realized by making a free market situation tolerable to the individuals involved.

*An Honorable Mention Paper*

A PRICE POLICY FOR AGRICULTURE CONSISTENT  
WITH ECONOMIC PROGRESS THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING

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I WISH to suggest and develop a five-point program that might be termed—a “middle way” approach to a sound price policy for postwar agriculture. This program would include:

I—Expanding emphasis on measures directed towards encouraging the use of, by voluntary means, educational opportunities and research procedures.

II—The use of a device similar to the British Wheat Act which permits prices of individual agricultural commodities to seek their market levels and provides for deficiency payments or reimbursements to be paid direct to producers for the difference between the market prices received and the minimum level of returns that has been guaranteed in advance.

III—The adjustments of these deficiency reimbursement levels from year to year between agricultural commodities by the use of a ratio between (a) the deficiency reimbursement level, and (b) the market price, which might be called “the support price-market price ratio.”

IV—The payment of deficiency reimbursements by the government only to producers following certain previously announced efficient production and marketing practices for individual agricultural commodities.

V—The expansion of the school lunch program and food stamp plan techniques for low income families in periods of general decreasingly serious. These dangers, as developed so thoroughly by Professor F. A. Hayek in his book, “The Road to Serfdom,” nutritional deficiencies is to encourage the utilization of grains in the form of livestock and livestock products.

*I. Expand Educational Opportunities and Research Procedures*

A sound program for postwar agricultural price or income policy must, in my judgment, give expanding emphasis to measures directed towards encouraging the voluntary use of price outlook in-

formation, efficient production and marketing practices, and provide for mobility opportunities on the part of individual producers. This education program should, of course, be coordinated with intensive research along these lines, not only by governmental agencies, agricultural experimental stations and colleges, but by corporations, cooperatives, foundations, farm organizations and trade associations.

It must be kept in mind that census data show that nearly 90 percent of agricultural production is produced on 50 percent of the farms. An agricultural price policy by itself can do very little to aid the 50 percent of the farmers who produce only 10 percent of the output. To help a sizable proportion of the "lower output" group, the price policy must be coordinated with educational and other employment service procedures to encourage the mobility of surplus workers from agriculture.

There is considerable merit to the view that, as society moves in the direction of increased planning and arbitrary controls, the dangers of regimentation and bureaucratic control becomes increasingly more serious. These dangers, as developed so thoroughly by Professor F. A. Hayek in his book, "The Road to Serfdom," added considerable support to those who advocate the "leave-it-alone" policy for postwar agriculture, and I for one, definitely lean in this direction.

It must, however, be recognized that the basic characteristic of agriculture makes it a somewhat separate and distinct problem from certain other segments of our economy in that, (a) the fertility of the soil is of direct concern to the entire economy; (b) that expanding populations in urban areas come largely from the surplus population on farms; (c) that low agricultural prices, at least in times of general unemployment, do not seem to encourage a rapid enough movement from over-populated depressed segments of agriculture; (d) that other groups of the economy at times operate on a curtailed output basis to the disadvantage of agriculture; (e) and that all of us have a serious stake in any segment of the economy when the situation is similar to that in 1932 when "tar and feathering" of judges and the march of thousands of farmers on Washington seemed to be endangering our entire political structure.

Also, we might as well be realistic about it—in view of the floor guarantees, subsidies and other controls that are already part of the legislation, and in view of the attitude of farm organizations

and farmers—there is little chance that the price policy of the future will be entirely free from these direct interventions.

For example, when Minnesota farmers, in a poll by the Minneapolis *Tribune* were asked, "Do you think the Federal government should or should not continue price controls on farm products after the war?," the majority favored continued controls despite the fact that the question did not make clear whether controls referred to floors or ceilings.

A realistic appraisal of recent platforms of various farm organizations also makes it clear that continued "parity" assistance (or a reasonable facsimile) is desired. However, it was rather significant to observe that in a survey made by the United States Department of Agriculture, published in May 1945, three-fifths of the farmers interviewed in the Corn Belt thought they should be permitted to produce whatever they pleased.

The new Secretary of Agriculture Clinton P. Anderson, in a talk on July 11 before the Advertising Federation of America, lent his aggressive support to a definite governmental price support policy at least for the reconversion period after the war by saying, "I want to see the government fulfill its promises on price supports to the farmers . . . since Congress and the Department of Agriculture have been promising that for some time after the war prices will be supported."

In a talk by Representative Clifford R. Hope at the American Meat Institute Convention last year, he stated he was convinced that support prices for agricultural products in some form or another would be continued as a national policy.

Therefore, it is the job of every agricultural economist to devote considerable thought and effort to procedures for making such controls conform to economic considerations as closely as possible and to see that they result in benefits to our entire economy. These are the main objectives of the suggestions outlined in this paper.

So much has been written and said about the short comings of "parity" as defined in the Agricultural Adjustment Act of 1933 and as repeated in subsequent acts that there is little to be gained by a review of all of its weaknesses. Even farm organization leaders have from time to time publicly admitted the inadequacy of the prevailing basis for agricultural price policies, but have countered critics with the practical phrase "give us something better." The views that follow are a sincere effort to meet this challenge.



*II. Allow Farm Prices to Seek Their Market Levels  
but Supplement Them with Deficiency  
Payments to Producers*

As a means of making governmental procedures conform to economic considerations as closely as possible, and as a means of avoiding the serious weaknesses in the present parity price program, I subscribe to the use of a device similar to that used in the British Wheat Act. The act permits the price of each agricultural commodity to seek its market level, based on existing supply and demand conditions. It provides for deficiency reimbursements to be paid direct to producers for the difference between the market price received and the minimum level of return which is assured in advance, if market prices are below the guaranteed level. In other words, if the support price of wheat is \$1.00 and the market price is \$0.75, producers are paid the difference of \$0.25 a bushel by the government.

This device already has received considerable support. In a comprehensive report by the Committee on Postwar Agriculture Policy of the Association of Land Grant Colleges and Universities, entitled "Postwar Agricultural Policy," published in October, 1944, this procedure was suggested as a basis for the orderly tapering off of wartime production incentives.

In his report to the President, Secretary of State James F. Byrnes, then Director of War Mobilization and Reconversion, on April 1, 1945, stated: "Situations may arise . . . in which it would ultimately cost the government less, and be to the long-time interest of the producers, to permit the prices to decline below the authorized support level, and make up the difference with direct government payments."

Secretary of the Treasury Fred M. Vinson in his report to the President, the Senate and the House of Representatives on July 1, 1945, repeated Secretary Byrnes' statement and urged that this idea be given most thorough study and pointed out that: "If the government makes this payment direct, it has the advantage of permitting the consumer to get more for his money, thus encouraging increased consumption. It allows farm prices to reach their natural level and thus puts the farmer in a better position to compete in the foreign market." Furthermore, it would tend to minimize the encouragement given by the present parity supports toward the use of substitute products on the domestic market (rayon versus cotton).

Secretary Vinson also pointed out "surplus payments can be so adjusted that farmers can be steered away from those crops which are not profitable to produce."

Then too, a significant fact is that dairy farmers, and more recently cattle and sheep producers and feeders have worked with government agencies on programs designed to make subsidy payments to them, thus showing their willingness to be on the receiving end of such payments. Much of the experience and administrative technique gained through the payment of subsidies direct to producers readily can be applied to making deficiency payments direct to producers.)

### III. *Adjust Deficiency Payments Between Commodities by the Use of the "Support Price-Market Price Ratio"*

This brings us to one of the major objectives of this paper which is to present an easy-to-understand, workable plan for making these adjustments. I propose that the adjustments of these deficiency reimbursement levels from year to year between agricultural commodities be made by the use of a ratio between (a) the deficiency reimbursement level, and (b) the market price. This device might be called, "The Support Price-Market Price Ratio."

To illustrate—let's make the arbitrary assumption that the guaranteed price of hogs, calves, and of lambs in any one year would be \$10.00 per cwt., and that the market price of hogs that year turned out to be \$7.50, the market price of calves \$10.00, and the market price of lambs \$12.50 per cwt. The next year's guaranteed level of returns would be adjusted downward in the case of hogs, remain the same in the case of calves, and adjusted upward in the case of lambs. Further adjustments would be made in subsequent years, all hinged on the relationship between the actual supply and demand market price and the new support level that had been assured to producers.

Legislation might provide that in no event should the adjustment be more than 10 or 15 percent upward or 10 or 15 percent downward in any one year and consideration should be given to the use of a one year lag between the price ratios used and the guaranteed support. This would permit the use of the technique of "forward pricing" and would, for example, assure hog producers, prior to the farrowing season, of a minimum level of returns on hogs for the following years.

This procedure would automatically adjust for changes in de-

mand for a particular commodity and for changes in the cost of producing a particular commodity (serious weaknesses of the present parity price formula) and would have the distinct advantage of making price changes gradually, thus giving producers time to make their required production adjustments. It also has the outstanding advantage of being automatic and thus not subject to the many pressures that always influence administrative judgment.

The *over-all* return to agriculture might still be related to some minimum net income parity formula, preferably one of relative real income between urban and rural groups rather than parity price relationships or possibly one related to the level of land values. This is one of the serious weaknesses of the present "parity income" concept since, as the Land Grant College Committee states "there is a constant tendency for advantages such as accrue from higher farm prices and farm incomes to be capitalized into higher farm land values . . ." or to encourage more persons to remain on farms than necessary.

In any event the commodity price adjustments as outlined earlier should be made first and then if it is found that over-all level would have to be raised a certain amount to maintain the real income to agriculture all individual supports could be increased by the apportionate amount. On the other hand, if the net real income relationship of agriculture improved, or if land values started to rise, all adjusted supports would be decreased by the same proportion.

#### *IV. Pay Deficiency Reimbursements Only to Producers Meeting Efficient Production and Marketing Practices*

It is my strong conviction that these deficiency payments, wherever possible, should be made only to those producers meeting certain standards of efficiency in their production. In this way our entire economy will benefit from funds so expended and consumers, as well as producers, will share in the benefits of increased production. This would help assure continued public and congressional support for funds to cover the cost of the program.

The technique for paying producers for desirable soil building practices already has been fairly well explored. This could be expanded to paying livestock producers for more efficient production and marketing practices. As a basis for procedure, and in order to prevent the program from becoming too centralized, consideration should be given to the use of state committees made up of agricultural experiment station officials, AAA representatives, county

agents and others to determine the desirable practices for their state and the proportion of the deficiency payment that would be paid for each practice.

Agricultural colleges and experiment stations already have developed lists of various desirable production and marketing practices for both crops and livestock, and the deficiency payments could be set up on a scale that would provide an incentive on the part of individual producers to follow these specific and desirable practices.

It is true that when the market price is above the support level no additional benefits will be derived on the part of those who follow such desirable practices, but they will still gain from the advantages of observing efficient economic production and marketing methods.

#### *V. Expand School Lunch Program and Food Stamp Plan Techniques*

As a final step in a sound postwar price policy for agriculture, consideration should be given to the expansion of the school lunch program and food stamp plan techniques for low income families, especially in periods of high unemployment and general depression. This technique not only aids those groups having "the highest propensity to consume," but if used to encourage the utilization of grains in the form of livestock and livestock products, would be one of the effective ways of preventing the accumulation of grain surpluses, and at the same time correcting nutritional deficiencies. The plan has the additional merit of not interfering with normal price making functions and marketing practices and can be easily coordinated with the programs outlined in earlier sections of this paper. For a thorough development of this plan, reference should be made to the pamphlet, "A Food and Nutritional Program for the Nation" published in May, 1945, by the National Planning Association.

Agricultural price policy during the postwar period should, I think, be designed to conform as closely as possible to the pattern outlined by Colmer Committee Report on "Postwar Economics Policy and Planning," published in September, 1944, which states, "for the attainment of postwar prosperity we must look primarily to the efforts of private enterprise, its management and its labor forces. The role of the government is essential to provide the setting in which these efforts have the best prospects of success. At the

same time it is the obligation of the government to take direct public measures for the protection of its citizens against the economic hazards which are unavoidable in a progressing economy that preserves freedom of private enterprise and individual opportunity."

The agricultural price policy of the future also must be established with the recognition that neither agriculture, labor nor industry can solve its own problems without giving thorough consideration to the problems of the other groups and to the welfare of our entire economy. As Professor O. B. Jesness in his talk at the National Farm Institute in 1944 pointedly put it, each group must recognize that the best way to obtain a larger slice of the national income pie is by making the pie larger, rather than by taking selfish steps to obtain a larger portion of a smaller and smaller pie. What we so desperately need is a domestic "reciprocal trade program" between industry, agriculture and labor designed towards the goal of full production and full employment through private enterprise, and a sound agricultural price policy would be an important step toward this goal.

To summarize, the five-point program outlined in this presentation has attempted to take into account, not only the economic aspects of the problem, but also its political and administrative aspects. It is clear that any program designed to correct the weaknesses of the existing parity price policy must not only conform to sound economic principles but must be politically feasible. Thus, the proposals to:

- I—Expand Educational Opportunities and Research Procedures,
- II—Allow Farm Prices to Seek Their Market Levels but Supplement Them with Deficiency Payments to Producers,
- III—Adjust Deficiency Payments Between Commodities by the Use of the "SUPPORT PRICE-MARKET PRICE RATIO,"
- IV—Pay Deficiency Reimbursements Only to Producers Meeting Efficient Production and Marketing Practices, and
- V—Expand School Lunch Program and Food Stamp Plan Techniques,

Constitute the framework of a "middle way" approach to post-war agricultural price policy.

*An Honorable Mention Paper*

A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING

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*Introduction*

IT IS conceded that the Steagall Amendment which involves price supports at a high percentage of "parity" prices for two years and possibly nearer three years after the war with Japan is ended will create difficulties for the Government and eventually for farmers. Changing these provisions to give farmers lower prices than those guaranteed or to put limits on production will be construed by the farmers as an act of bad faith on the part of the government comparable to an abrogation of contract obligations with manufacturers. Some plan should be devised to fulfill these obligations as to farm income and yet to prevent any prolonged maladjustment to agriculture. The best solution may be a subsidy payment to farmers to make up the difference between guaranteed parity prices and actual average open market prices during the 2 or more years involved on actual average wartime production for each farm. The farmers could then adjust their acreage and production to suit market demands. Some compromise on loans, making them flexible from 50 to 75 percent of parity might be feasible if put through by farm organizations. This paper does not propose to give a complete solution to this immediate postwar problem, but rather to outline a plan for stabilizing agricultural production and income at an adequate level which will permit during the next decade a continuing development of efficiency in the industry and a continuing adjustment to permit servicing of demand in all markets available. This plan should function until evolution of conditions, regulatory institutions, and accumulating data makes a more ideal plan understandable and acceptable by the public and workable in operation.

In this paper, the whole problem of a price policy will be approached for all agricultural commodities by centering attention first on feed grains. Some of the main reasons for this are: (1)

Livestock, particularly hogs, poultry, and dairy cattle, and livestock products, constitute by far the largest demand for crop land and other farm resources in the United States. Stabilizing feed grains would directly stabilize the supply and kinds of livestock and indirectly assist in reducing fluctuations in supply and prices of all major farm products. (2) Factual background for sound reasoning has been made available for corn and hogs, the main grain crop and the main meat supply, relative to supply and demand controls. See U. S. D. A. Technical Bulletin No. 826, "*Controlling Corn and Hog Supplies and Prices*" and references given therein. (3) If a stabilization policy for feed grain crops and as a result a more stabilized price for livestock can be made workable and acceptable to the farmers and general public, wheat and rye can be fitted into this program also, since the marginal use, after exports, of these bread grains is livestock feed. (4) A program can be made effective early for stabilizing production and prices for all grain crops (indirectly for grain-fed livestock, poultry and dairy products). At about the same time a program can be made effective for adjusting cotton and tobacco production to demand while perishables and beef cattle (where demand is elastic) could await insistent demands for assistance upon the part of growers of those commodities and also await a few years of experience in forward pricing on perishables with inelastic demand curves.<sup>1</sup>

### *Stabilizing Supplies of Grains and Livestock*

By using the factual material and carefully arrived conclusions and references in Geoffrey Shepherd's U. S. D. A. Technical Bulletin No. 826, "*Controlling Corn and Hog Supplies and Prices*," as a foundation, a related but new plan will here be presented for the first decade following the close of the war. Shepherd's plan which provides scientifically determined loan levels for forward pricing operations, which in practice means "*producing farm products on contract*," would gradually become a more important part of agricultural price policy during the decade. Immediately, the following plan would suffice.

In brief, the overall plan here given would be to determine what a "normal" or some appropriate average supply of feed grains would be for each year for the next few years, modifying each yearly figure to allow for longtime trends in acreages and yields (i.e. total pro-

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<sup>1</sup> Irish potatoes could be put under forward pricing immediately.

duction). The feed grains to be included in order of volume are corn, oats, barley, and grain sorghums. Quoting Bulletin No. 826 on page 82, "Stabilizing supplies of corn would take out most of the fluctuations in total production of feed grains, but before total supplies of feed can be completely stabilized, it will be necessary to set up stabilization for the other feed crops too." This stabilization would be accomplished by having the Government purchase or acquire on surplus feed crop years or through especially adapted non-recourse commodity loans all grain above the designated normal supplies for that year, and to automatically release enough of these stocks in short crop years to make normal supplies available to feeders.<sup>2</sup> There would be no restrictions on acreages or production. There would be exceptions to this procedure, specifically designated in the Act. For example, in time of war, in periods of unemployment and depression and in business boom periods, modifying actions would be taken. By stabilizing supplies of feed grains offered for use each year, much of the basic causal factors for hog and poultry cycles would be removed. Bulletin No. 826 says, "The problem of controlling supply (hogs) is largely a problem of controlling the supply of the raw material." The manner in which wheat and rye will be fitted into this stabilization picture will be treated briefly, as will perishables, cotton, tobacco, rice, special and miscellaneous crops.

The method used in securing control of surplus feed crops and of disposing of the same in this plan varies markedly from that suggested by Shepherd. He proposed to arrive scientifically at loan values and use them in a forward pricing manner, such loan values having been designed to call forth a predetermined amount of grain needed to supply demand. In the plan presented in this paper, the government, when a surplus appeared (above normal requirements) in total production of all feed grains would purchase them at prevailing market prices and also make some non-recourse loans<sup>3</sup> at such levels as to secure control of all the surplus above normal.<sup>4</sup> Similarly on deficit years, sales (or redemption of loans by farmers)

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<sup>2</sup> Releases of feed grains could be on an area basis in such a way that releases would be made in a deficit area even while counter-acting amounts were being purchased in surplus areas.

<sup>3</sup> These non-recourse loans would be made to allow farmers to redeem them only when a deficit feed situation occurred in the area where the grain was located.

<sup>4</sup> If this program is to be largely self-supporting, a small percent less than the surplus above normal would be acquired by the Government in surplus years and less than enough released to make normal supplies in deficit years.



at or near *prevailing market prices* would be made by the Government automatically and of an amount sufficient to bring grain supplies to normal levels.

*Loans and purchase contracts could be offered farmers in such a form (covering five or more years of crop fluctuations) that subsequent legislation based on pressure group tactics to prevent release of supplies could not interfere with or abrogate these contracts with individual farmers to release such grain until the contracts (which would bind the Government to a certain program of stabilization) expired and different contracts were provided for by law.* The courts would enforce these contracts against abrogation by the Government.

During the time of a depression and of considerable unemployment the operations of grain stabilization activities under these contracts would proceed normally to insure normal amounts of available feed grains and of livestock and livestock products for consumption. Since market prices would surely decline<sup>5</sup> for grain and livestock under these conditions, the price of livestock would be maintained by paying livestock raisers a certain amount above market prices per unit as a bonus or subsidy to maintain returns at what the Federal Land Bank has in recent years called "normal values" i.e. a reasonable average price for normal peacetime conditions.<sup>6</sup> This would tend automatically to keep prices of grains near normal also.

During a war or in periods of emergency and of excessive amounts of purchasing power in the hands of consumers and the Government, the contracts would provide a different approach by permitting greater than normal consumption of livestock and livestock products during that time. When these conditions could be foreseen, outlook information and goals could be used to increase grain production and to step up all agricultural production as was done in World War II. Non-recourse loans at attractive levels might be resorted to. For periods of short non-emergency increases in purchasing power (booms) in the hands of consumers, mild increases in grain crops could be called for a year ahead and increases in the "normal stabilized" amount of feeds available to livestock feeders could be increased on a predetermined ratio with estimated

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<sup>5</sup> U.S.D.A. Technical Bulletin 826, p. 11—"A change of 10 billions in total non-agricultural income causes a corresponding change of \$1.20 in hog prices.

<sup>6</sup> Normal values might be tied to prices prevailing during recent periods of normal employment or a normal non-agricultural income situation.

increases in total non-agricultural income or increases in total employment.<sup>7</sup>

Livestock prices should be uncontrolled during normal times and during short non-emergency periods of increased purchasing power of consumers. During war and emergency periods, rationing with ceiling prices and floor price guarantees would be invoked to get maximum productions and socially desirable distribution.

In summary, the general plan here suggested is to stabilize grain supplies (without acreage controls) available to feeders each year with certain exceptions for emergencies and to let free open market operations determine prices of grain, livestock, and livestock products. "Forward pricing" as suggested by Shepherd and Schultz of Iowa could await reasonable achievement in stabilizing grain and livestock production. Stabilization would, no doubt, cut costs of production and marketing considerably and consumers under this plan could eventually get much of the savings through a general lowering of food prices. But as Shepherd says, "Most farmers would produce more hogs in response to a guarantee of \$9.00 than for a forecast of \$10.00." This would be true in principle of most, if not all agricultural products and the next step "forward pricing" through non-recourse loans would result in still further savings in cost, and still higher levels of living for consumers and farmers.

### *Protection Against Inventory Losses*

From Shepherd's discussions, it is learned that maximum reserve stocks of 700 to 800 million bushels of corn would stabilize annual supplies of corn, except perhaps during one year in 71. Since corn is about 75 percent of the total supplies of feed grains, one-third more or a little over one billion bushels in corn equivalents<sup>8</sup> would be sufficient to reasonably stabilize all feed grains. To protect inventory losses and shortages of storage space all amounts added to the reserve of over 800,000,000 bushels in corn equivalents would be 95 percent of the first 100,000,000 bushels, 85 percent of the second and 70 of the third and so on progressively.

For drought years such as 1934 and 1936 when total production was less than 70 percent of the normal stabilized supply not all of the deficit could be replaced from the reserve stocks. Thus there

<sup>7</sup> See p. 11—U.S.D.A. Technical Bulletin, No. 826.

<sup>8</sup> Measured on the basis of amounts of total digestible nutrients per bushel as compared to corn.

would be some lack of complete stabilization at both extremes. Grains should be imported during extremely short years. Some form of quota system would be necessary (no tariffs) to maintain stabilization. Moreover, as prices of feed grains rose from shortages below "normal stabilized" supplies, wheat might become available for feed in increased amounts.

### *Wheat and Rye Stabilization*

Wheat<sup>9</sup> differs from feed grains in that significant amounts of some varieties will be exported into the world markets if tariff barriers are reduced and wheat prices are allowed freely to follow world market quotations. This encouragement to exports is recommended as an important part of a price policy for wheat. Under only two conditions would competitive wheat prices be modified or supported. During wartime or other emergencies when more wheat was needed than would be produced under free and open prices, price supports, by non-recourse loans and ceiling prices would be invoked by the Government. In times of large U. S. or World crops or both, wheat prices in the Pacific Northwest and in the Winter Wheat area of the Southwest might fall to feed grain prices or below.<sup>10</sup> At such a time the feed grain stabilization corporation would go into the domestic market and buy all wheat that could be purchased at the prevailing price of corn in the central cornbelt on a T. D. N. equivalent basis.<sup>11</sup> This surplus wheat would become a part of the feed grain reserves and would be sold out for feed (not for flour) at feed prices during a feed grain deficit year, and sold preferably in or near the areas where this wheat originated when there is a feed grain deficit in or near these areas.<sup>12</sup> For more details, see separate submission on wheat.

### *Price Policy for Cotton, Rice and Tobacco*

These crops will have to be adjusted in acreage and production to domestic needs plus what can be exported. Until such time as agriculture in cotton, rice, and tobacco areas can be adjusted to

<sup>9</sup> The word wheat will be used to denote both wheat and rye.

<sup>10</sup> Feed grain prices would be stabilized to a considerable extent by this program and at fairly uniform prices from year to year.

<sup>11</sup> Prices of wheat in wheat areas have infrequently fallen as low as values of feed grains in major grain producing areas, but with feed grain being stabilized this could happen in the Pacific Northwest and in the Southwestern Winter Wheat area.

<sup>12</sup> Even though for the country as a whole there was a surplus of feed grains and purchases were being made elsewhere during the same year.

this situation a program of declining price supports (in the form of cash payments to growers) to give a progressively smaller percentage of parity prices should be instituted. Some world stabilization agreements might be feasible for cotton and rice although for tobacco it would be questionable.

### *Price Policy for Dairy Products, Beef Cattle and Sheep*

Dairy prices in general should remain on an open competitive market basis except for whole milk where marketing agreements have functioned well. No control program would be needed except in war periods and depressions. In depressions price supports in form of subsidies to producers would be workable, in maintaining a steady flow of dairy products to consumers.

Beef cattle and sheep should be handled as in prewar days with however more intensive outlook service for producers. Better stabilization of hogs and poultry production and grain feeding under the proposed feed grain program would have beneficial effects in stabilizing demands for feeders, beef and mutton. Little can be done to stabilize range carrying capacity within a decade but numbers allowed on the range can be. However, more uniform marketings can be encouraged and made possible by a system of subsidizing hay reserves held by individual ranchers. This is recommended in semi-arid regions. For war periods and depressions beef cattle and sheep would get the assistance as herein before outlined in the form of price supports. During wartime, ceiling prices on hay might need to be used as at present. Price supports for hay eating animals during a depression would tend to hold hay prices at normal levels.)

### *Price Policy for Perishables*

An experimental program of price supports acting as a "forward pricing" device could be instituted for Irish potatoes. Loans should be kept low and apply to standard grades only and correspond to average *variable* (not overhead) production costs<sup>13</sup> of the previous year as they differ in the main commercial potato growing areas. On surplus crop years some potatoes would be acquired by the government. These should be sold to by-product industries or for livestock feed and the government should absorb the loss. Competition within the industry would soon provide more stable acreages

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<sup>13</sup> As determined by a sampling survey conducted yearly by the B.A.E.

and larger average crops because of the elimination of a large part of the price risk. This would mean lower average prices to consumers. Research for a better use of surpluses should be continued.

Whenever a clear case of public benefit could be demonstrated, as in the case of Irish potatoes, other perishables would come under a stabilizing program similar to that for this crop or modified to suit peculiarities of that crop and of markets and demand. In general, however, the initiative and burden of proof should be on a majority of the growers. Proceedings similar to organization for market agreements would be desirable.

### *Price Policy for Oil Crops*

A free open market on a world wide basis would seem desirable here, whenever world peace seems reasonably assured for a decade or more.

### *Stabilizing Demand*

Programs should be instituted to permit all consumers to purchase requirements for a full balanced nutritive diet each year regardless of business conditions. Unemployment, sickness, and old age insurance,<sup>14</sup> subsidized food tickets, school and in-shop lunches and other means of a similar nature need to be expanded. Education can be used to encourage the use of better quality and balance in foods consumed, and to exalt food into a higher bracket in consumer's arrays of values i.e. budgets.

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<sup>14</sup> *Land Policy Review*, Spring and Summer, 1945—Volumes VII and VIII.

*An Honorable Mention Paper*

**A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING**

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**S**UGGESTIONS for modernizing parity prices and establishing support price levels.

In making the following suggestions with respect to modernizing parity prices and establishing support price levels for agricultural commodities, it is assumed that the objectives of our postwar agricultural price policy will be:

- A. To promote the efficient use of our agricultural resources in producing a balanced abundance of agricultural commodities, and
- B. Assure a level of farm income which will permit an improving standard of living on farms and provide an expanding market for the goods and services of the non-farm population.

It is further assumed that the postwar agricultural program will be a part, but only a part, of a national program designed to stimulate employment, increase production of goods and services, promote international trade, and raise living standards. It is assumed also that every effort will be made to improve opportunities for individual economic freedom and to minimize governmental regimentation consistent with the attainment of the over-all objectives.

Attainment of the over-all economic objectives in this manner requires recognition of the role of government in the agricultural price field as being in the nature of an insurance agent—protecting farmers against disastrously low prices, but not guaranteeing a high price to every farmer in every market every day. It also means that government may find it necessary, through encouraging cooperatives, or otherwise, to supplement existing marketing agencies and facilities in order to implement its price commitments. A further pre-requisite is that considerable authority be delegated to administrative agencies and their advisory committees to make adjustments to meet changing conditions. On the other hand, the legislation delegating authority to administrative agencies should contain

reasonably definite standards and formulae for the guidance of administrative agencies.

Since 1944, parity prices as computed and published by the Bureau of Agricultural Economics have been used as the primary legislative guide or standard for governmental price action with respect to agricultural commodities.

For a period of two years beginning the January 1 immediately following the date upon which the President by proclamation, or the Congress by concurrent Resolution, declares that hostilities in the present war have terminated, the Government is committed to support all so-called basic and Steagall commodities at 90 percent of parity. For the period following the termination of this commitment, however, it is appropriate to examine the nature of this standard.

### *I. How Parity Prices are Computed<sup>1</sup>*

The present parity price formula defines a relationship, or exchange ratio, between average prices paid by farmers and average prices received by farmers. It is not primarily a cost-of-production or standard-of-living formula. Not all cost-of-production elements are reflected in the formula and a single index of prices paid by farmers is used for all commodities, irrespective of the varying rates of change in cost of production for the individual agricultural commodities.

The steps or methods used in calculating parity prices for agricultural commodities are:

- (1) A base period price is determined for each commodity. Where satisfactory data are available this is done by computing a single average of the average prices received by farmers for the 60 months beginning August 1909 and ending July 1914. The average price thus computed, for example, for cotton was 12.4 cents per pound, corn 64.2 cents per bushel, and wheat 88.4 cents per bushel. Where satisfactory data are not available for pre-war periods more recent base periods are used. For a number of fruits and vegetables, the base period is August 1919 to July 1929, and in the case of burley and flue-cured tobacco is the 60 months from August 1934 to July 1939.

<sup>1</sup> For a more complete discussion of this subject see Wells, O. V., *Parity Prices, What They are and How They are Computed*, mimeo, Bureau of Agricultural Economics, June 30, 1942.

- (2) An index of prices paid, including taxes on real estate and interest paid is calculated. This index is computed and published as of the 15th of each month. As of June 15, 1945, the index was 173—using the 1910 to 1914 period as 100 percent. This means that prices paid by farmers, including interest and taxes as of June 15, 1945, were at a level 73 percent above the level which prevailed in the 1910-14 period.
- (3) The third step is to multiply the base period price for each individual agricultural commodity by the index of prices paid, interest, and taxes. For example, the June 15, 1945, parity price for cotton was computed by multiplying 12.4 (the base period price) by 1.73 (the current index of prices paid), the result being 21.45 cents per pound. The parity price of corn similarly computed ( $\$0.642$  per bushel times 1.73) is  $\$1.11$  per bushel as of June 15, 1945, and the parity price of wheat ( $\$.884$  per bushel times 1.73) is  $\$1.53$  per bushel.

## II. *Inadequacies of Parity Prices as Now Computed as a Guide to Production and Market Prices*

Differential changes in production costs of agricultural commodities are not reflected in parity prices as now computed. As indicated above, the parity price for each commodity is determined by multiplying a base price for that commodity by a single index of prices paid, including interest and taxes, but not including farm labor. Thus, parity prices for all commodities go up and down with the general level of prices, irrespective of the trend of production costs for individual farm commodities. This tends to result in relatively favorable parity prices for commodities, the production of which over the past 30 years has been highly mechanized with important savings in labor costs. It tends to result in relatively unfavorable parity prices for those crops and livestock products which still have a high labor requirement or for which relatively few improvements have been made in production techniques.

The present parity price formula, likewise, does not reflect differential changes in the demand for individual farm products. For example, in the 1910-14 period large quantities of oats were needed in cities as a horse and mule feed and oats commanded a premium over other feed grains of comparable nutrient value. With the decline from approximately 17,000,000 head of horses and mules off



of farms to less than 2,000,000 the special feeding demand for oats has tended to disappear but this change in demand has not been reflected in the parity price for oats, and in the 1935-39 period prices received by farmers for oats averaged only 67 percent of parity, whereas, corn prices averaged 84 percent of parity. The decline in the use of horses and mules both on and off farms is likewise reflected in the relationship of actual prices to parity prices for these animals. During the 1935-39 period the farm price of horses averaged 51 percent of parity and the farm price of mules averaged 54 percent of parity. In contrast the price of beef cattle averaged 95 percent of parity, reflecting the relatively strong continuing demand for beef. Cottonseed represents a commodity, the products of which have found ever-widening market outlets with the result that prices to farmers for cottonseed during the 1935-39 period average 95 percent of parity. It seems quite evident that as of the most recent pre-war period long-time trends in demand had resulted in a situation where parity prices based on pre-World War I price relationships were relatively too high for horses and oats on the one hand and relatively too low for beef cattle and cottonseed on the other. There are numerous other examples that might be cited to illustrate the inadequacies of parity prices as presently computed as guides for production and day-to-day market prices for individual farm commodities as a result of differing trends over the years in production costs of, and demand for, individual agricultural commodities.

As illustrated above, one measure of the relative favorableness of parity prices is the extent to which market prices for a recent period of years have varied from parity prices. Out of 60 commodities, farm prices averaged less than 50 percent of parity during the 1935-39 period for 1 commodity, between 50 and 60 percent for 4 commodities, between 60 and 70 percent for 6 commodities, between 70 and 80 percent for 16 commodities, between 80 and 90 percent for 12 commodities, between 90 and 100 percent for 8 commodities, and over 100 percent for 13 commodities.

It should be remembered that parity prices are based on average prices covering all qualities of a commodity being sold, all locations at which they are sold, and all periods of the year during which they are sold, except in a few isolated instances where some adjustments are made for seasonal variations. In using parity prices as a guide to market prices, therefore, it is important that adequate pro-

vision be made for adjustments to reflect differences in quality, differences in location, and differences in time of marketing. Also provision should be made for adjusting prices to take into account carry-over stocks.)

Since only one figure is published as of any given time to represent the parity price for a commodity, there is a tendency to regard only one price as representing true parity, leaving out of consideration quality, location, time of marketing, and other factors which determine the value of commodities. The base period prices on which all parity prices are computed do not represent a constant price over the base period. During the base period, there were wide variations in prices and thousands of individual prices were taken into consideration in computing the averages which form the basis for parity prices. In the case of cotton, for example, the average price received by farmers as of the 15th of each month varied from 8.6 cents per pound on December 15, 1911, to 14.5 cents per pound on June 15, 1910, as compared with the average of 12.4 cents per pound for the entire period. Likewise, the average price for the entire period varied by States from a low of 11.4 cents per pound in Oklahoma to a high of 17 cents per pound in Florida (reflecting the higher value of Sea Island Cotton in Florida). In addition there were, of course, variations in the price of cotton as of any given time depending on the quality of cotton being marketed. Likewise, in the case of wheat the average monthly United States prices during the base period varied from a low of 76.1 cents per bushel to a high of \$1.14 per bushel as compared with the average for the period of 88.4 cents per bushel. Average prices for the entire base period varied by States from a low of 76 cents per bushel in Montana to a high of \$1.29 in South Carolina.

### III. *Suggestions for Improvements in the Parity Price Formula*

In order to accomplish the objectives outlined at the beginning of this paper and to minimize the amount of discretion which would otherwise be necessary to leave to administrative agencies, it is suggested that the parity price formula itself be revised so as to:

- A. Make the formula a more accurate index of production costs by including the cost of hired labor in the parity index, and
- B. Provide for continuous modernization of parity prices by a periodic revision of the base prices of individual commodities, taking into consideration the relationship of the average

prices of individual commodities to all agricultural commodities during a period of 5 or more years during the preceding 10 years, with a proviso that the average of all parities weighted by the gross farm value of the individual commodities during the preceding 5 years shall not be increased or decreased by more than 2 percent as a result of such adjustments of individual base prices. Under such a formula, the general level of all parity prices would be maintained at approximately the same level as if each parity price were based on the pre-World War I period. Making continuous adjustments in the base prices for individual commodities, so as to reflect relationships during the preceding 10 years would, however, reflect in the parity prices trends in the production costs and relative demands for the individual commodities. Provision for the elimination of not more than 5 years of the 10 preceding years in the computation of the adjusted base for any commodities would permit the omission of years when price relationships were abnormal because of floods, droughts, or other unusual conditions.

#### *IV. Suggestions for Implementing Price Policy Objectives*

It is suggested that administrative agencies be directed to carry out price-supporting operations within the following frame-work:

- A. Direct that price-supporting operations shall be carried out at such levels as are calculated to maintain the ratio of the per capita income of persons on farms to the per capita income of the non-farm population at not less than 100 percent of the 1910-14 ratio and to maintain an overall price ratio for all agricultural commodities (prices paid, interest, taxes, and wages of hired labor to prices received by farmers) of not less than 90 percent or more than 110 percent of parity (1910-14 = 100 percent).
- B. Authorize the carrying out of price-supporting operations including loans, purchases, and diversion payments, with respect to individual farm commodities, or groups of farm commodities at not less than 75 percent, or more than 125 percent of the adjusted parity prices for such individual commodity, or group of commodities, with appropriate quality, location, and seasonal differentials. In establishing the support levels for individual commodities, consideration should be given to:

1. The attainment of the over-all production, income, and parity price objectives specified above.
  2. The extent to which stocks of individual commodities have accumulated or are likely to accumulate.
  3. The relationship of the support price for one commodity, or group of commodities, to the attainment of production and price objectives with respect to a closely related commodity or group of commodities. For example, in establishing the levels for support price for feed grains, it would be necessary to take into consideration the level of support prices and production objectives with respect to livestock products.
- C. It is believed that with (1) the adjustments in parity prices and the flexibility in establishing individual commodity support prices suggested above; (2) continuation of the authority which now exists for using the funds of Commodity Credit Corporation, and funds appropriated under Section 32 of Public Law No. 320, Seventy-fourth Congress (30 percent of Customs Receipts) in making loans, purchases, payments, and export sales, in developing new uses, and in distributing commodities for relief; and (3) an aggressive, well financed, soil conservation program, the foregoing price and income objectives can be achieved with a minimum of governmental regimentation and individual commodity production restrictions.

*An Honorable Mention Paper*

**A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING**

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**A**GRICULTURAL price policy is today as prominently before the American people as it was a generation ago. There is good reason for this interest when one notes the similarity of changes in farm prices during the two wars and the tremendous expansion—nearly one-third<sup>1</sup>—in the total volume of agricultural production during World War II.

No satisfactory long-term price and income policy has evolved for agriculture, although several programs have been tried during the past two decades.

*Desirable Objectives*

As long as the war continues our farm price policy should, of course, be geared to the war effort. Likewise, all prices should be subject to regulation as long as there is a general scarcity of goods and a serious threat of inflation.

The transition from a war to a peacetime economy should be handled with foresight and care. Agriculture ordinarily adjusts slowly and it is therefore desirable that heavy government purchases of food and price supporting measures be not suddenly discontinued, but rather that they be scaled down gradually and dovetailed into a long-term agricultural program. It is to the long-term policy which this paper is primarily directed.

There are two major objectives for a long-time agricultural price policy to which most people will subscribe:

1. It should make certain a reasonable and fairly stable farm income.
2. It should be in harmony with national interest and general public welfare. This objective includes efficient and well balanced production of the kind and quality of foods and fibers for which there is an active demand.

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<sup>1</sup> Production in 1943 and 1944 over the 1935-39 average.

People will differ as to how these objectives can be attained, but they are not likely to disagree seriously on the desirability of attaining them.

The officers of the American Farm Economic Association have added the following three requirements as essential for any proposal which is to serve as a practical basis for farm price and income policy:

1. It should be easy to understand and simple to administer.
2. It should be sufficiently flexible to reflect changes in cost and demand conditions for any farm commodity.
3. It should be so designed that it will be possible for consumers, as well as producers, to share in the benefits of increased production.

It is assumed that the third point refers not only to increased production of farm products but also to industrial products and services for it is important that farmers share in improvements in other lines as well as for them to share their own advances with others. Certainly the objective should be to have all parts of our economy share in every major improvement relating to costs, products or services whether on or off the farm.

#### *Present Policy Only Partially Effective*

Two standards have generally been used in testing the effect of price programs on agricultural income. One is the ratio of per capita net farm income of all people living on farms to the average income of all nonfarm people. The other is the ratio of per capita income of agricultural workers (operators and farm help) with that of industrial workers. These ratios are ordinarily considered to have been in balance or at parity during the five-year period 1910-14.

By either standard a stable farm income is a relative matter. By either standard farm income between the two World Wars should have been substantially higher than it was. These standards also show that the various farm programs, while undoubtedly helpful, did not bring parity income to agriculture consistently over a period of years.

The ratio of per capita net farm income of people living on farms to the income of all nonfarm people is obviously the more conservative standard of the two. Not only was this ratio considered in balance in 1910-14, but it was nearly in balance in 1925-29 and again

in 1935-38 even though the unemployment roll was between 8 and 10 million persons in the latter period. The nearness of this standard to being in balance in the late 1920's and again during part of the 1930's should largely do away with any criticism of the 30 year historical base. In fact, it is probable that this standard would not be wholly acceptable to agriculture since farm leaders have usually made comparisons between farm income and that of industrial labor.

On a per capita basis nonfarm people receive \$3.16 for each \$1.00 to farm people under the first standard. Under the second standard the industrial laborer received \$1.59 for each \$1.00 to the farm worker. These dollar relationships indicate that any error in equity in applying the first standard to rising prices and incomes is probably against rather than in favor of the farm people. A ratio is usually better for measuring relationships around a particular price level than it is in going from one level to another.

Programs developed under the parity price concept have been applied on an individual commodity basis and sometimes on a market basis as in the use of Federal orders in fluid milk markets. Prices and price ratios have not remained static but have fanned out over a wide range making difficult individual market and product control. Prices of 160 farm products varied from less than 50% of parity to over 140% of parity for the period 1935-39. Within each type of product such as grains and hay, vegetables, fruits and animal products, there were wide differences in percentage of parity. Prices for the same 160 products in 1943 varied even more and ranged from under 50% to well over 300% of parity.

As a result of the parity price and commodity approach, cotton prices were supported at a level which prohibited normal exports and which maintained production above domestic demand at the very time there was a burdensome supply on hand and when land and labor were needed for food production to support the war effort. Likewise, this policy tended to confine the production of certain crops such as tobacco and cotton to particular areas and in some cases high cost areas.

No provision has been made for changes in farm and nonfarm populations or changes in methods and volume of farm and industrial production. The farm population dropped from 32 million in 1910 to 25.5 million persons in 1944, while the nonfarm population rose from 59 million to nearly 112 million. Farm production has

been generally upward from an index of 79 in 1910 to a peak of 136 in 1944.<sup>2</sup> Industrial production figured on the same basis varied from an index 58 in both 1921 and 1932 to 235 in 1944.

*Recommend Policy with Parity Income Guarantee*

The most desirable price policy for agriculture and for our economy as a whole would be to have all prices established by normal operations of supply and demand provided that there is substantially full employment and provided our economy is in balance. The difficulty with this concept is that the premise upon which it rests does not conform to the conditions that are likely to prevail for a considerable time after the war. It is not certain there will be full employment or that the economy will be in balance. War is a powerful unbalancing force. Technological developments are many and revolutionary; social and economic forces have never been more dynamic. Agriculture cannot adjust quickly and farm income suffers disproportionately during periods of adversity.

Before continuing in the direction of more and more governmental control in agriculture it would seem advisable to try to devise some other way of keeping agricultural income in balance with the rest of the economy through measures that will lead to less rather than more regulation.

If agriculture is to prosper it must work for both a large national income and for a fair share of that income. It is not enough to obtain a fair sized piece of the income pie. It is also necessary to have a larger pie. This suggests agricultural policy should deal with price making forces and with the resulting income and not merely with prices. Some of the more important considerations are as follows:

1. It should include a national policy to promote a sound over-all economy in which a high level of production and employment is encouraged. Successful efforts along this line will not only help create maximum markets and fair prices for farm products, but also economic opportunities for surplus farm people.
2. Every effort should be made, through education, research and organization, to increase efficiency in farm production and marketing. No one can expect to make prosperous an inefficient agriculture or inefficient operators within agriculture.

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<sup>2</sup> Average production for 1935-39 equals 100.



3. Since adequate diets effect profoundly the health of our people and also the market for farm products a sound national nutrition program should be developed both as an aid to consumers and to farmers. It should be geared primarily to consumer needs and agricultural benefits should be secondary.
4. Export markets for farm products should be developed as extensively as possible consistent with our general foreign policy and sound national fiscal policy.
5. *Agriculture as a whole should be guaranteed a minimum share of the national income as a floor below which total farm income will not be permitted to fall. If total net farm income from normal operations is below the prescribed minimum then it should be supplemented with parity income payments direct to individual farmers in proportion to the market value of the products which they produce and sell.*

The first four measures are generally understood and fairly widely accepted. It is hoped, of course, that action of this type will be so successful that no other will be necessary. The real problem is what to do when these measures fail to bring satisfactory farm income. The fifth proposal is designed to meet this need. It operates in terms of parity income rather than in terms of parity prices, and in terms of agriculture as a whole rather than in terms of individual commodities.

#### *How the Guarantee Would Work*

In developing a program for guaranteeing to agriculture a minimum share of the national income, the problem is divided for analytical purposes into three parts:

1. What minimum share of the national income should go to agriculture?
2. How should the money be raised?
3. On what basis should it be distributed?

*Minimum Share:* Two bases were used earlier in testing the effectiveness of our agricultural price programs. These methods can also be used in determining the proportion of the national income which should go to agriculture. They are:

1. Per capita net income of persons on farms with persons not on farms in the ratio which existed during some base period when there was reasonably full employment and after people have

had reasonable opportunity to choose their work and locations. The 1910-14 period is believed to be fairly satisfactory for this purpose. The farm and nonfarm incomes were also nearly in balance on this basis in 1925-29 and again in 1935-38, not counting government payments to agriculture.

2. Per capita net income of farm workers (operators, hired help and family labor outside the house) compared with industrial labor. This ratio while undoubtedly more acceptable to agriculture is probably less justifiable in a national program involving not only farm people and industrial labor but all others as well.

Either ratio would adjust automatically agricultural income to the number of people on farms. If the second ratio were used it would probably be necessary to take 1925-29 or 1935-39 as a base period in which case much of the difference in recent years between the two ratios would be eliminated.

*Source of Funds:* Most agricultural leaders would like to avoid government payments and have all their income obtained from the sale of their products and through the usual marketing channels. This is but another way of saying that consumers should pay a price sufficient to bring to people in agriculture a fair and reasonable income. Such a program leads to production control for there is no way of guaranteeing that consumers will pay such prices for all that is likely to be produced after the war. It also means that when prices are raised artificially the burden falls heavily upon those least able to pay.

Since the problem is essentially one of distributing fairly the national income it seems logical to take the funds from public sources and raise them through taxation. This will not disturb the movement of goods through normal trade channels including exports and will not pile up burdensome supplies. In the long run it will likely be less costly than indirect measures.

*Parity Income Payments to Farmers:* It has already been suggested that when parity income payments are necessary they be made directly to individual farmers in proportion to the value of the products which they produce and market. This is believed to be a reasonably good measurement of their contribution to society. Payments will be made on the basis of production and sales rather than on the basis of restrictions or curtailments of production.

It is suggested that two limitations be placed upon parity income payments:

1. That a limit be placed upon the percentage of the total of such payments which can go to any individual, firm, corporation or association.
2. That cash payments be made only to those following satisfactory soil conservation practices and that payments due others be allowed only for conservation measures on such farms. It would seem that payments from public funds could well be conditioned upon serving the public and the farmer's own interest through soil and fertility conservation.

It is frankly recognized that cash marketings may not in all instances be comparable and therefore may need some adjusting. For example, if producers retail their own milk a division must be made between the farm value of the milk and payments for marketing services. Likewise, where fruit is purchased on the trees allowance may need to be made for the picking service to put it on a comparable basis with other products. Consideration must also be given to eliminate duplication or pyramiding of payments particularly in feed crops and livestock which are sold from one farmer to another. It is believed that difficulties of this kind are not insurmountable and are much less than in the separate treatment of prices for individual commodities.

### *Application of Plan*

The data necessary for determining the total amount of parity income payments are now collected annually by the United States Department of Agriculture. It is probable that these figures need to be refined. Any error in the national data will affect the total amount to be paid out and not the relative amounts to individual farmers. Each farmer will need to furnish his own evidence of products produced and marketed.

The total annual parity payments under this plan would have varied from nothing in 1925, 1937 and 1941-44 to 3.5 billion dollars in 1921. In 1931 and 1932 the parity income deficits were about 2.2 and 2.1 billion dollars respectively. They averaged 1.1 billion dollars during the twenty-year period 1921-40. These figures are large, but they are also indicative of the hardships which agriculture suffered due to maladjustments in incomes. The govern-

ment payments that were made were not well adjusted to annual parity requirements.

Parity payments in percentage of cash marketings would have varied from nothing in those years in which there were no deficits to as much as 43% in both 1921 and 1932. For the periods 1925-29 and 1935-38 these payments would have averaged about 4.5%. They would have been largest in the years when the need was greatest.

The program outlined here can go a long way in attaining the objectives listed earlier. It permits full production and freedom of action on the part of the individual farmer. It gives agriculture a direct interest in promoting the national economy since the industry is assured a minimum share of the national income. Unless the minimum parity income is placed at too high a level there need be little fear of people staying in too large numbers on farms or of a land boom. People have moved off of farms in largest numbers when farm incomes were relatively high due to the fact that city employment opportunities were largest during these periods. Farm land prices have risen during periods when farm incomes were above parity or when price levels were rising.

Some people will not like the possible drain upon the federal treasury from this program during periods of low farm income. On the other hand, it is probably as equitable a way as any of balancing incomes without restricting production. The parity income payments are simple and flexible. Considering that they extend to all of agriculture with its 5.5 million units it is believed the administration will not be unduly involved. Finally it should be emphasized that this program is designed to assure agriculture a fair share of the national income in proportion to its contribution and to the contribution of individual farmers. It is not a cost of production or relief program.

*An Honorable Mention Paper*

A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING

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*A. Prices and Production*

THE foremost problem confronting agriculture after the post-war conversion period is to find markets for the greatly expanded farm production. Other problems are ancillary to this. The emphasis will shift from production to marketing and distribution of commodities. A favorable solution to this problem depends not only on high levels of employment, productivity, and national income, but also upon a redistribution of agricultural resources induced by the price system. An adequate agricultural price policy must provide for a sound integrated program of both production and consumption.

Despite a drop of over 5,000,000, or nearly 17% since 1940 in the number of persons living on farms, farm production has increased 35%. Output per farm worker has advanced 20% above pre-war levels. Part of this rise is due to an increase in average hours worked; but the long-term rise in output is largely attributable to mechanization and application of the enormous progress in scientific production.

Encouraged during 1944 by the largest cash farm income in history, estimated at \$19.8 billions (excluding government payments of \$800,000,000), farmers will strive to maintain their phenomenal gains. During the post-conversion years there will be adequate farm labor and a substantial potential consumer purchasing power. But a declining demand coupled with four years of unprecedented production and a considerable carry-over of certain products into the post-war years will press downward upon farm prices.

Consumer expenditures are not likely to fall as rapidly as national income, but farm prices will tend to drop under conditions of declining employment and industrial earnings.

The competitive nature of agricultural production makes contraction more difficult than for other enterprises. Production by

separate farming units may recede, but once agriculture as a whole is over-expanded, it requires prosperity again to restore an adequate demand for its products. Immediate action is therefore needed to avert an agricultural crisis; the essence of this is a price policy which will avoid deflationary havoc, prevent stagnation, and encourage long-term adjustments. )

During the war period, the greatest rise in wholesale markets has been in prices of farm products, which increased 110%. Retail markets have not felt these price rises directly partly because of the subsidy program. The prices of foods will probably not immediately drop except for seasonal declines, since the demand from Europe, our military, and civilian consumption will take all the food we can produce for at least two seasons.

In the long run, our large agricultural production in relation to demand will tend toward lower prices of agricultural commodities, particularly food products. Once European production is resumed and shipping is available, the world price level for agricultural commodities will tend to drop appreciably. Price levels now sustained by governments in some producing countries are likely to induce greater production when wartime difficulties have vanished. If this country is to hold its own in most export markets, it will be necessary to evolve a price policy which will enable American farmers to compete in the world market. Prices become the key to the post-conversion years and to the immediate transition period. Farmers should be protected from the danger of a postwar price deflation as well as inflation and be assured of relative price stability and adequate income.

The price problem focuses upon an integrated production and consumption program to maintain a level of farm production 40% above prewar levels.) This requires expanded markets at home and abroad. There are several methods by which this can be achieved. This method is taken as the only one consistent with economic progress, adequate and more stable incomes from farming and the maintenance of a relatively free market economy. The plan recognizes the transition period and long-term adjustments and recommends basic policies needed for a sound agricultural and total economy. Policies specifically chosen to achieve the objectives of a high level of farm income, production, consumption, and employment of resources, each consistent with an economy of abundance are: (1) shifts toward foods most required for better diets; (2)

encouragement of such programs as school lunches, in-plant feeding, and education for improved nutrition; (3) shifts to more farm products having a comparative advantage in foreign trade; (4) initiation of adequate adjustment programs to facilitate shifts in production rather than sustaining particular production on farms no longer suited to produce these commodities; (5) removal of price rigidities and tendencies to stabilize prices upward rather than facilitate adjustments toward more economically suited areas; (6) extension of Federal benefit payments partly to individuals as consumers, thereby encouraging adjustments through consumer demand pressure in the markets.

Based upon these policies the following program should be adopted:

### *B. Transition Period and Deflationary Dangers*

The transition period from war to peace can create the basis for obtaining high levels of productivity and farm stability in the longer run. Needed shifts should be encouraged during the comparative prosperity of this period. Since Congress has guaranteed price floors at 90% of parity for the basic agricultural products for two full seasons after the end of the war, these prices are not likely to decline as a group for the next few years.

The pattern of post-conversion demand for agricultural products will vary. The demand will increase for those commodities which have been in short supply during the war and which have a high income elasticity of demand; therefore, encourage output of commodities having a high income elasticity of demand, particularly those requiring a large combination of land and labor such as meats, dairy products, and eggs.

While farm prices are relatively high, consistent with shortages and abnormal demand, and farm real estate values 30% over pre-war levels, the impending danger is a deflationary spiral in farm prices and real estate. Between 1919 and 1921 farm prices fell 70 points and by 1932 had declined 110 points. From 1922 to 1936 over 30% of the farms in the U. S. had mortgage foreclosures. It is imperative, therefore, that we have an agricultural price policy well integrated with a production-consumption program to prevent this situation from recurring.

As an initial step parity price policy should be revised.

### C. Parity Price Policy

The basic parity concept should be maintained but a new price policy is needed. *Parity price has come to mean that price which brings forth supplies which will not move through the normal channels of trade.* Technological innovations, changes in cost of production and distribution make the present parity formula inconsistent with a progressive, dynamic farm economy.

The criteria of an adequate parity formula are: (1) it should aid in apportioning national income equitably among agriculture, labor and capital; (2) it should easily be applied and administered; (3) it should reflect production and market conditions; and (4) it should maximize both production and consumption, thereby enabling consumers as well as producers to benefit. Obviously, the old parity formula based primarily upon relationships of 1910-1914 does not meet these standards. Investigation of alternative parity standards using different base periods for different products, trend values and moving averages, as well as relative incomes which would necessitate an estimate of prices to bring forth such income, all have too many shortcomings. The fundamental weakness of the parity formula is its tie to a historical base period, particularly illustrated by the A.A.A. program, which failed miserably to achieve adjustment shifts because of the supplementary "parity payments" pro-rated according to normal yield on average acres of a past production base.

A progressive farm price policy compatible with an expanding economy should: (1) encourage mobility of resources; (2) serve as a tool in dealing with weather and cyclical surpluses; (3) prevent monopoly and stabilize the general level of farm prices. To achieve these goals will necessitate the following action:

1. The two-year commitment of 90% parity prices will offset precipitous price declines. Encourage farmers during this period to shift to commodities more in demand at home and abroad.

2. Provide "adjustment payments" for individual commodities to facilitate shifting. Devise these payments on the basis of *necessary prices* for individual crops. The *necessary price* is defined as that price necessary to induce output of a commodity and return to the producer more than he would ordinarily receive from the next best alternative use of his resources.



Derivation of *necessary prices* should be undertaken on a representative sampling basis using farm budget analyses for different commodities in combination and for competing commodities in various regions and areas of the country. Much is already known about production responses of farmers to price changes in different areas of the country. Wartime production goal programs coupled with parity and subsidy payments provides an important insight into the *necessary prices* needed to induce production shifts. The exact nature of the cost curves over time for various commodities and areas of production will be difficult to determine; thus, continual analysis is needed to ascertain various production responses at different levels of sustained prices. Experience and constant price analysis will provide adequate tools for perfecting a *necessary price*.

The replacement of parity prices by a system of *necessary prices* is far more sound in reflecting equitable prices needed by farmers, and will result in a public price policy for agriculture which will benefit producers and consumers alike.

3. Parity prices should be considered as a yardstick for determining the average level of aggregate farm prices. Shift the general base period from 1910-1914 to a new base, 1925-1929, since returns to farmers, labor, and capital more nearly approximated a balance in this period. The base 1925-1929 permits agriculture to retain its wartime gains and is needed to offset the relative disadvantage under which it operated during the 30's. Rationally, parity standards should be derived in terms of absolute incomes instead of attached to historical periods, but the only practical approach at present is to attach a parity standard to a base period as recent as possible so that parity prices will reflect changes in cost of production and supply and demand relationships between commodities. This will involve continuous cost and demand analysis to place it in relative balance with returns to labor and capital.

4. Supplement annual *Production Outlook Charts* and forecasts by working out *Consumption Outlook Charts* and forecasts. Before planting of basically important crops the B.A.E. should issue estimated equilibrium prices reflecting domestic and export demand for the succeeding year. This should be periodically revised and would provide a guide to farmers in planning output schedules.

5. Set up an annual list of *necessary prices* which the government will guarantee to 90 percent for different commodities. Such prices

will be current, reflect changes in costs, supply and demand conditions, and take into account present changes in labor, technological innovations, and management. They will perform the fundamental purpose of parity prices—to reflect quickly the presence of divergences in agriculture, introduced by changes in systems of farming, machinery, expenses, etc., geographically and by commodities. A set of loans guaranteeing 90 percent of announced *necessary prices* should be handled through the Commodity Credit Corporation.

*Individual farmers want definite price floors, and they would be more favorably disposed toward a price policy guaranteeing them a minimum annual income.* Equilibrium prices, the rational competitive ideal, means lower prices. *Necessary prices* over the long-term should approximate equilibrium prices. This price policy predicated on income would result in farmers utilizing the best combination of resources and individual commodities to maximize their income. Competition would bring shifts, for example, in some areas from cotton to dairying. Hence, more dairying would induce shifts in marginal dairies to the next best alternative.

Necessary prices should indicate price relationships of individual commodities within the over-all parity framework; they should be designed to adjust prices so that farmers are encouraged to utilize the best combinations of resources and commodities to achieve a reasonable level of aggregate parity prices.

Advantages of this price plan would include: (1) continual encouragement of shifts to best alternative employment of resources; (2) absence of production or quota controls; (3) revival of the original idea of the ever-normal granary—not to act as a price peg, but as a price stabilizing measure.

#### D. Prices and Farm Population

Integrated with a price policy using *necessary prices* should be methods of raising real farm incomes. To equalize the gains of labor real farm incomes will need to be maintained at present levels. Large volume outputs at declining costs and rising productivity per farm worker reflected in lower costs should make this possible. The size of the total farm enterprise can be contracted as efficiencies increase. Farm and urban wages would more nearly balance, many farms would either enlarge or become absorbed on larger farms, effecting large-scale economies, and production and consumption more nearly approach equilibrium.

### *E. Prices and Surpluses*

A stable level of employment requires maintenance of gross national output 40% above the 1939 level. A post-war gross national product at levels currently being hypothesized foreshadows a domestic demand for food about 20% above pre-war levels and might mean surpluses of food and agricultural commodities ranging from \$2 to \$4 billions under present production levels.

An adequate price policy should prevent chronic surpluses and mitigate ill effects of weather and cyclical surpluses. Measures to help achieve this end are:

#### 1. Expand Home Markets

- a. Prevent monopolistic activities which restrict the size of the market, unduly enhance prices to consumer, or force farm prices below economic levels.
- b. Remove inter-state trade barriers.
- c. Institute a national nutrition program which would benefit all school children regardless of family income and guarantee an adequate diet at minimum cost to low income families.
- d. Educate consumers about the facts of nutrition and foods in order that producers will be encouraged to abandon low-priced surplus type production giving preference to foods needed for better diets.
- e. Encourage consumer cooperative associations to stimulate the development by processors and distributors to pay more for crops according to condition, quality, and nutritive value.
- f. Encourage research for industrial uses of farm products.
- g. Extend grading and inspection program to both farmers and consumers.
- h. Adapt market news to decentralized marketing.

#### 2. Expand Foreign Markets

*Practically without regard to the relationship of income and prices, farmers have literally priced themselves out of potential markets, particularly foreign markets.* In years of high farm output and larger exports, 1910-1919, real farm income generally increased. Farm exports accounted for 23% of cash farm marketings. With restricted production from 1934-1940, exports were low and real

farm incomes declined. Farm exports totaled 10% of cash farm income. More stable and higher farm income necessitates farm exports at relative levels equal to those in 1910-1919 and higher, preferably 15%. To do this we should:

- a. Encourage the shifting toward commodities having a comparative advantage in foreign trade and those most needed at home.
- b. Improve and expand the reciprocal trade agreements.
- c. Initiate the proposed international food and agricultural organization patterned on the principles of the Hot Springs Conference.
- d. Establish a world commodity corporation to offset impending deflationary farm prices, with objectives to mitigate the disrupting effects of excessive price fluctuations through operation of buffer stock piles to promote an expansionist policy in world trade. Maximum and minimum limits of the price ranges should be subject to continuous study by the corporation and adjustments made according to basic trends of normal demand and supply.
- e. Abolish export subsidies; they perpetuate maladjustments, invite retaliatory tariffs which transfer dollars into foreign treasuries, and hinder expansion of trade.

#### *F. Prices and Adjustments*

The problem of adjustment is to redistribute production capacity. Policies to encourage adjustment include:

1. Plan immediately for an *integrated* de-control policy of subsidy removals and the gradual abandonment of price controls in order to avoid serious producer and retail price disruptions.
2. Remove A.A.A. restrictions such as those penalizing long staple cotton production in the "new lands" of the Mississippi delta.

3. Institute an international agricultural statistical agency comparable to the I.L.O. for providing necessary economic information relating to prices, costs, production, exports-imports for commodities by countries and regions, thereby enabling farmers to make better decisions not based primarily on habit.

#### *G. Prices and Agricultural Fiscal Policy*

Farmers should be given support to remove some risk taking

from their enterprise to the same degree as exists in other industries. *We should pursue a price policy which seeks to counteract cyclical movements in the price system and not to perpetuate secular maladjustments.*

*Certain palliatives for agricultural relief are necessary. Some price pegging plans for farm products are undoubtedly vital in the interest of short run economic stability, but where price supports are practiced they must rest upon a sound foundation of productivity and national income. Any solution to the surplus problem is contingent upon high levels of employment, productivity, consumption, and national income. Unfortunately, past price programs have dissipated their energies upon all types of restrictionist schemes, which over the long run can benefit neither the producer nor the consumer. A positive approach to finding markets for our agricultural production should be directed to attainment of high levels of national income and employment.*

*The first step is to expand the home market. A 10% increase in income in lower income families will have a much higher effect on total food consumption than a similar increase in income in higher income groups.*

The market economy needs overhauling so that it can withstand rough times which it weathered so miserably between the two wars, and also needs better rules of law that will permit adjustments not based upon mere arbitrary decision as in the past. A price policy for agriculture should reflect the operations of a freer market, thereby directing shifts among commodities into the most desirable combinations of production. Moreover, the price policy should be so devised that it would necessitate a minimum of government interference with the market mechanism in quest of ostensibly aiding particular interest groups. The price policy as outlined above is the only one compatible with promoting adequate and more stable income from farming, and encouraging a dynamic, progressive, and healthy farm economy.

A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING

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THE price policy for American agriculture in the past has been characterized by miscellaneous purposes and methods. To assure production of wheat and hogs in World War I their prices were supported. In World War II prices of many more commodities have been supported for the same reason. Price policy from 1929 up to, and for some products even including, World War II has been concerned with improving farm income. Price pegging under the Federal Farm Board and loans by Commodity Credit Corporation have been used to increase farm income. Real dangers to agriculture result from this practice, for no economy can be healthy which produces products not wanted—which makes relatively ineffective use of its resources.

The price system provides the mechanism for allocating scarce means among competing ends. Price tends to channel productive factors into uses yielding maximum satisfaction. It rations scarce supplies.

There is no clear understanding among agricultural policy makers as to the role that price policies play nor particularly what might be accomplished by modifying them through a conscious price policy. With the exception of the war periods the objective has been to increase the income going to farmers by lifting the level of prices paid or at least by preventing their decrease.

The parity price program has had one objective of justice in which the "just price" bore a relationship to real or fictional prices existing in the 1910-14 period. Neglecting relative increases or decreases in production costs as well as demand changes, the parity program has attempted to tie present day prices to those existing over three decades ago. These prices are based not upon the need for the product, not upon the best use of resources, but upon a statistical happenstance. Apparently they are subject only to revision upward by political pressures. That there is danger in the

continued use of "parity price" is indicated (1) by the fact that crops not greatly needed may be produced to the extent that others more necessary will be neglected, (2) that supplies of some products may become so great that the market will not absorb them, and (3) that political pressure groups may make impossible any hope of its working and bring only collapse by continually forcing upward guaranteed prices in terms of percentage of parity.

*Policy Modification.* A price policy for the future must first allow the best use to be made of resources.<sup>1</sup> Prices must, therefore, be used to direct resources into the production wanted by the people. For this purpose the aims of the proponents of forward pricing are admirable in that they would have a government group set prices which would bring out the desired production. The vulnerability of this method to political pressures, as evidenced by the legislative increases in price guarantees as percentage of parity, leaves little hope of administration like that intended.

A plan less susceptible to these pressures is needed. One based on objective data and directed to effective use of resources is needed. In the price plan to be outlined it will be necessary to determine the price for a product which will clear the market over a period of time, adjust this price to each production season, and fix the price in terms of percentage of this norm. The plan suggested, a form of forward pricing based on objective data, may not direct resource use as satisfactorily as forward pricing by committee action operating perfectly. However, political pressure groups would doubtless not let the latter operate perfectly, so that it would be little better than the parity program in directing resource use. The operation of the suggested plan is, however, based upon calculations by formula from market data.

Free market prices in the past have brought about changes in production over long periods of time but not over short periods.<sup>2</sup>

<sup>1</sup> Some writings on this include:

D. Gale Johnson, "Contribution of Price Policy to the Income and Research Problems in Agriculture," this JOURNAL, Vol. XXVI, No. 4 (Nov. 1944), pp. 631-664.

Geoffrey Shepherd, "Bases for Controlling Agricultural Prices," this JOURNAL, Vol. XXIV, No. 4 (Nov. 1942), pp. 743-760.

— *Agricultural Price Control*, Iowa State College Press, 1945.

T. W. Schultz, "Economic Effects of Agricultural Programs," *American Economic Review*, Papers and Proceedings, Vol. XXX, No. 5 (Feb. 1941), pp. 127-154.

— *Redirecting Farm Policy*, Macmillan, 1943.

<sup>2</sup> Shepherd, Geoffrey S. *Agricultural Price Control*, Iowa State College Press, 1945, pp. 4-16.

Acreages remain relatively constant but yields cause wide variations in production. Production adjustments to price cannot promptly be made, but may take five, ten, or more years as the growing characteristics of the product vary. In addition there are some situations in which farmers' costs can be reduced by increasing price stability.<sup>3</sup> It is the aim of the plan presented, therefore, (1) to establish prices which will bring the production of resources needed, and (2) to introduce no more price fluctuation than is necessary so that farmers may have a reasonably stable income. The objective is to stabilize prices in agreement with resource use—not to lift prices.

Prices established before the production season gets under way, on the basis of prospective market demands, enable the farmer to plan and adjust his production to those needs. In addition the amounts of products produced will tend to be in line with those taken in the market.

The plan of pricing as first presented applies to goods which (1) can be stored beyond one crop season, and (2) are not exported in significant amounts. Modifications are then made for perishable products, and a different plan is suggested for products exported.

*The Plan.* The prices set by this plan are determined by changing conditions of the market. They should be announced in advance of the production period to which they apply. To prevent confusion the prices thus determined are called "norm-prices." A price guaranteed by the government may be any percentage of this norm-price.<sup>4</sup> In fact for some products for which data may not be as reliable as desired it might not at first be wise to guarantee the full amount. The norm-price in the plan is based upon the average price<sup>5</sup> existing for the previous marketing season which is modified by the change in total supplies<sup>6</sup> available. If supplies are greater the norm-price will be lowered, if they are smaller the price will be raised. The extent of the change will also be influenced by the elasticity of demand for the product. The following steps would be necessary:

1. Determine average price received.
2. Ascertain change in total supplies.

<sup>3</sup> Brownlee, O. H. "Some Considerations on Forward Prices," this JOURNAL, Vol. XXV, No. 2, (May 1943), pp. 497-499.

<sup>4</sup> Unless otherwise indicated it is assumed that the full norm-price is guaranteed.

<sup>5</sup> The price received by farmers.

<sup>6</sup> The method of determining total supplies will vary with products.



3. Determine the coefficient of elasticity of demand.
4. Modify average price received by price differential based on supply and elasticity factors to obtain norm-price.<sup>7</sup>

Determination of a norm-price would be done in the following manner. Suppose that the average price for the preceding year was \$1.25 per bushel. If the total supplies were the same as a year earlier the norm-price would be set at the same level. If total supplies are larger the norm-price would be fixed at a lower price for the product. Approximations based on unit elasticity would probably be satisfactory temporarily at least for products for which adequate demand curves were not available. For example, if the total supplies were 10 percent larger than the year before the norm-price would be decreased 10 percent, or \$.125 to \$1.125 per bushel. Similarly a decrease in total supplies would be accompanied by an increase in the norm-price. An increase of \$.125 to \$1.375 per bushel would follow a decrease in supplies of 10 percent.

Corrections made on the basis of the elasticities<sup>8</sup> of demand would be preferable to the assumed unit elasticity. If again the average price were \$1.25 per bushel in the year immediately preceding the increase in supplies equal to 10 percent and the coefficient of demand elasticity were  $-.7$  the norm-price for the coming year would be

$$1.25 + \left( 1.25 \times \frac{10}{100 \times (-.7)} \right) = 1.25 - .18 = \$1.07 \text{ per bushel.}$$

In this case the formula could be set up

$$np = ap + \left( \frac{ap \times s}{100e} \right)$$

where

$np$  = norm price

$ap$  = average price for preceding year

$s$  = percentage change in total supplies

$e$  = coefficient of demand elasticity

The formula might also be modified by giving some weight to acreage changes.<sup>9</sup> Conceivably temporarily high yields might cause

<sup>7</sup> Additional modifying factors may be added such as acreage change.

<sup>8</sup> The coefficient of demand elasticity may not be constant or linear for all sizes of supplies offered for sale. Research will determine how it varies with quantity of product.

<sup>9</sup> It may be desirable to add other items also in some cases.

total supplies to become so great that the norm-price following would be so low that production under normal yields would be cut to much less than the amount usually consumed. To prevent acreage from being cut too sharply following high yields, or to prevent acreage from being expanded too greatly following low yields, some weight might be given to acreage changes. Should equal weight be given to supply change and to acreage change, the formula (with  $a$  equal to the percentage change in acreage) would be:

$$np = ap + ap \left( \frac{s + a}{200e} \right).$$

In the case of unequal weights the formula would be:

$$np = ap + ap \left( \frac{cs + da}{100(c + d)e} \right)$$

where  $c$  is the weight for supply change and  $d$  the weight for acreage change.

For some products a seasonal variation in norm-price may be necessary because of wide seasonal variations in market prices. Without such a seasonal correction all products would have the same price support regardless of the time of the season at which they were marketed. As these seasonal corrections would considerably complicate the operation of a price support program they probably should not be used except in cases of extreme variation. If used their size should be in agreement with average seasonal differences over a period of years. Norm-prices should also vary with the grades of products. Price differentials in agreement with average market differences should be set up so that the norm-prices will give relatively uniform support to all grades. In that manner the producers of neither high quality nor low quality products will be penalized. Regional price differences will also be necessary, for with most agricultural products transportation costs account for large shares of the prices of products in terminal and consuming markets. Area price differentials have been used under the loan programs.

A change in the demand in addition to a change in supply may also affect prices of farm products. This change, however, is accounted for, at least partially, by basing the norm-price upon the preceding annual average prices and correcting it by supply

change and elasticity factors. This follows since the norm-price is not read directly from the demand curve, but only the coefficient of demand elasticity. The elasticity might differ slightly with a marked change in the demand curve, but even so it would have little effect on the norm-price.<sup>10</sup> There would be, however, some lag in price adjustment to demand changes.

The plan would not adjust immediately to major price changes. If it would adjust immediately to price changes there would be no stabilizing effect and consequently no object in using the plan. In case the market price drops below the guaranteed percentage of the norm-price the government will enter the market and buy all of the product offered at that price; or, if the loan method is used, will take the commodity if the farmer does not wish to redeem it at the guaranteed percentage of norm-price. It is important that the government should be allowed to sell the product so obtained whenever and wherever it wishes so that supplies will not be held almost indefinitely. Some price gains will at times result from holding these supplies and they will partially at least balance out losses which may come from ownership costs greater than market prices. Undoubtedly the government will have losses in some years.

Adjustment to the new plan very likely should not be made abruptly but over a period of several years. A gradual shift from the existing pricing method to the one proposed would tend to lessen the difficulty of making farm adjustments. First, the prices would be supported on the basis of the norm-price. Second, the government would pay to the producer a sum which when added to the market price would be equal to the norm-price plus perhaps two-thirds of the difference between the norm-price and parity price in the first year, and one-third of the difference in the second year. No payment would be made the third year. The adjustment might be made more rapidly or more slowly than the figures indicate to meet the needs for each of the products produced. It may be necessary to give direct education and aid to some producers shifting from the production of crops no longer needed in the same relatively large volume.

*Perishables.* Modifications of the price plan will be necessary if it is applied to perishable products which are in the main utilized

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<sup>10</sup> In previous illustration an increase of 10 percent in supplies gave a norm-price of 1.07. If the coefficient of elasticity decreased to  $-.6$  the norm-price would be \$1.04 or a difference of 3 cents.

within the United States. The same general method of pricing would be used by correcting the preceding average price by a factor based on the change in indicated total supplies and the coefficient of elasticity of demand.

As the storage supplies of perishable products would be at most relatively small they would not add much to the picture of total supplies. An indicated supply figure might have to be supplemented<sup>11</sup> on the basis of feed supplies and prices, for livestock products. The problem would be more difficult with fruits and vegetables. It might be necessary to use acreage or similar data—some of which would have to be based on intention reports in relation to price ahead of the production season. This relative inadequacy of data may make desirable price guarantees less than the norm-price.

Storage of the product for extended periods of time is impossible. Consequently, products obtained by the government in maintaining prices must be promptly used. Efforts certainly should be made to make effective use of these products by distributing them to low-income groups, school lunch groups, or others, in either fresh or processed form.

The pricing plan is complicated by the length of the production periods which vary greatly among the perishable food products. Fruits and vegetables, butter, hogs, and cattle<sup>12</sup> have periods of different lengths, and in addition the production of each has varying degrees of continuity. Prices for them should be announced before the production period starts. In addition for products produced continuously new prices should perhaps be announced quarterly or even more often.

Inasmuch as seasonal variations in perishable products are relatively large, similar adjustments in the norm-prices likely should also be made.

*Products Exported.* Sale at world market prices without production control or export subsidies is recommended for exported products as wheat and cotton. The use of a norm-price in the sense that it was recommended for products not exported is not possible. Were prices set above those prevailing elsewhere (including

<sup>11</sup> Considerable amounts of some products go into storage for appreciable periods. As some products can stand almost no storage, storage data would be of no aid in determining indicated supplies.

<sup>12</sup> Stabilizing effects of prices on feeds will also tend to stabilize prices of livestock and their products.

transportation costs) the products would flow into this country. The immediate job is to provide a means of transition from the relatively high prices prevailing in the nation now to the lower prices of the world market.

One method of adjustment would reduce regularly the support in terms of percentage of the difference between market prices and parity prices previously guaranteed over a period of possibly three years. The product would be sold at the prevailing (world) market price, and the difference between this and the parity prices paid to the farmer. For example, in the first year after the plan is placed in operation the farmer would receive the regular market price for his product. He would also receive an extra payment from the government of two-thirds of the difference between parity price and the average market price for the year. In the year following he would receive one-third. In the third year no extra payment would be made. The period over which this adjustment is made might be made longer but probably not shorter.

*Multiple Price Plans.* The benefits which might come from discriminatory pricing, as a food stamp plan, are limited. Such programs in the past have had a dual purpose. They have been carried on (1) with the aim of improving the nutritional level of low-income families and (2) with the object of increasing farm income through selling surplus crops under a dual price system. The two objects may be conflicting. In addition the effects upon the farm income are limited.<sup>13</sup> Gains which may result will tend to decrease as time goes on as a result of production increases when marketing margins will again approximate their earlier levels. Furthermore a food stamp plan apparently cannot concentrate consumption on specific products—as surplus products. The consumption can be increased only of those foods consumers want to buy.<sup>14</sup>

*Aids to Producers.* Periods of depression may necessitate aid to farmers to avoid hardship and to prevent too serious injury to the agricultural production plant. The major cause of reduced farm incomes in these periods is not found in lack of competitive pricing

<sup>13</sup> Shepherd states that the increase in total returns would probably not be over 4 percent where the demand curve is a straight line which he considers typical for agricultural products. See his article, "Price Discrimination for Agricultural Products," this JOURNAL, Vol. XX, No. 4 (Nov. 1938), pp. 805-806.

<sup>14</sup> Geoffrey Shepherd, *Agricultural Price Control*, p. 179.

or inadequate marketing facilities, but rather in a decrease of demand for farm products following unemployment and reduced incomes in non-agricultural enterprises. Agriculture will not be helped, therefore, by raising its prices or by cutting production, which may further aggravate the problem.

The government may find it necessary to give direct aid to farmers to keep the necessary farm production plant in operation—to prevent large-scale hardship and abandonments. How large would such aids need to be? This aid must be at least slightly in excess of the variable costs of the farmers whose production is needed. The variable costs must be covered for a number of years—not just one or two. As variable costs are a relatively small portion of total costs for short periods and may approach total costs over a long period of time, the relative size of the aid granted would be dependent upon the length of time over which the depression would stretch.

The aids should be granted to producers and not be price raising measures which would interfere with the use of resources. Neither should they be tied to cuts in production. The object of payment is to permit the operator to continue operations through the depression period without injuring his productive plant.

*Market Improvement.* Continuous efforts should be made to make the agricultural market more nearly perfect and more efficient. More information about production and marketing is needed. Outlook work could be expanded and improved so that producers would know more of what to expect of market possibilities for the immediate future and several years ahead. A great expansion in market news service down to country marketing points would give farmers more nearly adequate information for use in marketing their products. Likewise the expansion of grading and standardization down to country points would be of aid. These are needed (1) if price is to be the regulator of the type of product wanted, and (2) if producers are to receive prices based upon the relative values of their products. Along with these the further use of marketing research will help evaluate marketing practices and suggest remedies for some problems.

*Summary.* Prices are the means of directing the use of resources. If prices are permitted to adjust to market conditions the best use of resources will be approached. The plan suggested permits

prices to adjust to the market situation as the norm-price is based on the preceding average price of the marketing season corrected by supply and demand elasticity factors. It is intended that the use of norm-prices will (1) allow the best use of resources, (2) aid farmers in making their production decisions, and (3) stabilize prices by eliminating unnecessary price fluctuations. The plan applies to all products except those exported in appreciable quantities, whose prices would be allowed to reach the world price level over a short adjustment period.

*An Honorable Mention Paper*

A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING

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A PRICE policy for agriculture is concerned with two principal problems. First, the level at which farm prices should be maintained. Second, the methods or mechanics by which this level is brought about. In any present-day consideration of these two problems, a distinction should be made between: (1) the war and immediate transition years; and (2) the long-run, postwar period.

During the war, and for two years after the January 1st following the date upon which hostilities are declared to have ended, a *minimum level of prices* at 90 percent of parity (92½ percent for cotton) has been set by the Federal Government for the following farm commodities: corn, wheat, tobacco, rice, and peanuts for nuts; hogs, eggs, chickens, turkeys, milk, butterfat, dry peas and beans of certain varieties, soybeans, peanuts and flaxseed for oil, American-Egyptian cotton, potatoes, and cured sweetpotatoes. The first six are known as "basic commodities," and the minimum support levels of not less than 90 percent of parity are to be maintained by means of commodity loans. The balance of the list are known as "Steagall commodities," and their prices are also to be maintained at not less than 90 percent of parity, but the method by which these prices are to be supported may be by loans, purchases, or other operations.

Thus, the Government has set a minimum level below which the prices of a large proportion of important farm commodities shall not fall. Moreover, for the six "basic commodities," it has indicated that this minimum level must be supported by means of commodity loans. In addition, ceiling prices are in effect for all farm commodities, or the finished products thereof, as a part of the general economic stabilization program. The result, therefore, is that both maximum and minimum prices are now in operation. They determine the general level of farm commodity prices, which is now well above parity. Farmers, consequently, have incomes which, in gen-



eral, are quite favorable, and which are high enough to compensate them for the long period of relatively low incomes during the 1930's. The price ceilings and floors, together with producer and distributor subsidies, form the basic mechanisms by which the present price level is maintained.

Should this policy, already in effect, be significantly altered in the near future? The answer to this question must be in the negative. There may, of course, need to be minor adjustments in price ceilings from time to time, but approximately the present level of ceilings should be maintained until supplies are ample to permit the removal of rationing and, at the same time, prevent inflationary price rises. The commitment for maintaining minimum support-prices at not less than 90 percent of parity has been made by both the Congress and the executive branch of Government. This commitment should be carried out without equivocation. The farmers of the nation have accepted the commitment of their Government in good faith, and have brought forth a surprisingly large volume of greatly needed food. A part of this food production has, no doubt, resulted from the guarantee against a possible drastic decline in prices immediately following the end of the war. For Government to break faith with these producers by attempting to "squeeze out" of its commitment is wholly unacceptable.

There is, however, one modification which should be made in the existing price-support legislation. There should be a definite time limit to the period for which the price-support commitment applies. As the law now stands, prices are to be supported during the war, and "the two year period beginning with the first day of January immediately following the date upon which the President by proclamation or the Congress by concurrent resolution declares that hostilities in the present war have terminated." It was about 2½ years after the Armistice in 1918 before there was a formal declaration ending hostilities.

Because of the problems involved in occupying enemy territory, and the time which must necessarily elapse in working out the terms of the final treaties of peace, there may be good reasons for our Government to delay a formal declaration, ending hostilities in the present war, until long after the fighting has ceased. If such should be the case, the present price-support commitment pertaining to agricultural products might presumably be in effect for a long and indefinite period. Nevertheless, there will be a need for adjusting

agricultural production to the peace-time situation as soon as possible after the shooting stops. There are good grounds, therefore, for Congress to amend the present price-support legislation so that it does not extend beyond two full crop years following the formal surrender of the Japanese military forces. Such an amendment would not be a breaking of faith with farmers. It would, in fact, merely bring the technicality of the law into line with what most people, including farmers, expect.

Other than this proposed amendment to existing price-support law, the main price problem during the transition period is not how best to change existing policy, but how to carry out the price commitments which the Government has already made to farmers. The principal methods by which this is done may set the pattern for many years ahead. Certainly, they should be selected with the long-time problems of agriculture clearly in mind. Fortunately, the best ways in which the existing price commitments can be carried out also constitute a series of related courses of action which should form a major sector of a sound long-time price policy for agriculture.

If the existing price-support legislation is limited to the first two crop years following the cessation of active fighting in the Pacific, the problem of supporting the prices of farm commodities at 90 percent of parity is not likely to present any serious difficulties, except with respect to certain crops which will be discussed later, *provided the consumption of farm products can be maintained at high levels*. This proviso, however, is extremely important. Indeed, it is the key to the problem of carrying out the existing commitments during the transition years. But it is more than that. It must be one of the overwhelmingly important parts of a sound long-time price policy. Hence, much of the problem of molding an adequate agricultural price policy, for both the transition period and the years to follow, is embodied in the question: How can a high level of consumption of farm products be maintained?

There are four courses of action which should be followed to maintain a high level of consumption. First, the nation should have a comprehensive policy for maintaining full employment, under which the Federal Government assumes the responsibility for preventing the number of unemployed from exceeding approximately 4 percent of the labor force. Second, there should be a comprehensive policy for activating and expanding foreign trade. Third, there will

be need, even under conditions of full employment, for special programs to increase the food consumption and improve the diets of low-income families. Fourth, special provision should be made for the removal of temporary market surpluses of perishable commodities, such as fresh fruits and vegetables.

These four courses of action should become integral parts of a comprehensive policy for agriculture. Collectively, they can form a necessary bulwark against a declining demand for farm products. Within a year after the end of active fighting in the Pacific, all four of them may need to be invoked. Certainly, well-rounded policies for maintaining full employment and activating foreign trade will be necessary immediately after the end of the fighting. On the other hand, heavy requirements for relief feeding in foreign countries may not necessitate an immediate nation-wide program for increasing the food consumption of low-income families. Nevertheless, such a program should be inaugurated on a modest scale within the next 12 to 18 months, in order that needed experience for its future expansion may be gained.

The maintenance of full employment will involve a series of co-ordinated actions, on the part of private businessmen, organized labor and governments, in many fields of activity. The crux of the problem is to maintain the total of consumption and investment expenditures at a level high enough to take the total output of a fully employed working force. First attention should be given to Government policies which encourage a high level of *private* consumption and investment expenditures.

Some of the major steps that are necessary along this line are: (1) the elimination of monopolistic practices and similar restraints to production and trade; (2) a postwar revision of Federal, State and local taxes to reduce regressive excise, payroll, and general property levies in order to stimulate consumption, and an altering of corporation and high-bracket personal income taxes so as to stimulate business investment; (3) broadening the coverage and increasing benefit payments of social security programs, while financing a larger proportion of the social insurance funds from less regressive tax sources than at present; (4) maintaining a policy of low interest rates, through fiscal and monetary means, as a stimulant to investment; (5) the organization of a permanent and efficient national employment service which will effectively bring job-seekers and jobs together; and (6) raising the level of minimum wages, while

requiring by law, both labor and management to exercise more stability and responsibility in employer and employee relations. If these and other actions of this general character are not sufficient to maintain full employment, the Federal Government should take the responsibility for financing, and carrying out in cooperation with State and local governments, a public works program in sufficient volume to counteract the cyclical swings in private business activity.

The activation of foreign trade will involve such actions as: (1) a lowering of tariffs, and the removal of quotas and other import restrictions throughout the world; (2) international collaboration to bring about a stabilization of foreign exchange rates; (3) substantial loans from private and public agencies in the United States to foreign countries to aid in the reconstruction of war-torn areas, and to encourage the industrialization of underdeveloped regions of the world; (4) international collaboration in collecting and disseminating a wide range of economic information pertaining to production, consumption, price and marketing conditions in all countries; and (5) most important of all, adequate international machinery for maintaining peace and freeing the world from the constant threat of war.

The increased consumption of food among low-income families can best be brought about by the Federal Government augmenting their purchasing power in a manner that will encourage them to spend the increase primarily for food products. A program of this nature could be implemented by any one of several different methods. The prewar Food Stamp program represents one approach. There are others, which have definite advantages over the old Food Stamp plan.<sup>1</sup> The results of the Federal Government increasing the food-buying ability of low-income families would be: (1) greatly improved diets among such families; and (2) substantial increases in the demand for farm products. Moreover, by expanding or contracting the program, according to fluctuations in private employment, it could operate in part as a counter-measure to the swings of the business cycle and to annual variations in crop yields.

A program for removing temporary surpluses of perishable commodities would involve two main lines of action. First, the Federal Government should provide a service which forecasts the probable

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<sup>1</sup> See, for instance, the method proposed by the Aiken-La Follette, National Food Allotment bill (S. 1151, 79th Congress).

supply of these commodities a few weeks in advance of their appearance in the markets, and, in case of a prospective oversupply, encourages the large distributors and users of food, such as chain-stores, hotels and restaurants, to inaugurate special campaigns to sell or use larger than average amounts of such commodities during the short periods of market gluts. Second, in extreme situations, the Federal Government should purchase perishables that are in temporary oversupply and give them to school lunch rooms and eleemosynary institutions which feed large numbers of people.

These four main lines of action to maintain a high level of demand for farm commodities—the maintenance of full employment, the activation of foreign trade, the special encouragement of consumption on the part of low-income families, and the removal of temporary surpluses of perishable crops—should be the only methods by which the Government maintains the prices of *a large number* of farm commodities. They can be the means, along with a program of production goals and adequate outlook work, by which the existing price-support commitments of the Government are carried out during the transition period, for most farm products. Moreover, they should form the backbone of an agricultural price policy in the postwar years ahead. This means that they must be widely recognized by farmers as being as much a part of agricultural policy as crop control, commodity loans, and marketing agreements have been in the past.

If these policies are fully, efficiently, and courageously put into operation, the prices of livestock, poultry, dairy products, feed grains, tobacco, and practically all fruits and vegetables, will be automatically maintained at levels well above the present minimum guarantees. Moreover, the methods involved will not require a regimentation of farmers, or a discrimination against other groups in society. The entire population, including rural youth and thousands of small farmers on submarginal land, will benefit from the job opportunities that a full-employment economy will offer. At the same time, agricultural production can shift to the most efficient producing areas, and costs thus be reduced.

As important, however, as these policies will be in maintaining an adequate demand for farm products, and, hence, an adequate income for farmers, they cannot be expected to represent a complete and equitable agricultural price policy. It is possible, for in-

stance, that these measures alone would not be sufficient to carry out the Government's price-support commitments, during the transition period, for such crops as wheat, cotton, rice, peanuts, soybeans, flaxseed, and potatoes. How shall the problem with these crops be met? Three of them—cotton, wheat, and rice—are important export commodities. If producers of these crops are to retain sufficiently large foreign outlets, the prices of these commodities cannot be maintained above world market levels. However, a world market price, during the transition period, for these commodities maybe well below the level of 90 percent of parity now guaranteed by the Government, and probably would not measure up to the standards of a fair and equitable price in the postwar years. A greatly expanded production of most of these crops, including potatoes, dry beans and peas, has been encouraged by the Government as a war measure. There is, therefore, considerable responsibility on the part of the Government, over and above its present price commitments, to cushion the producers of these crops against drastic price declines as they adjust their production to the peacetime situation.

The best way in which the Government can do this is to allow the prices of this whole group of commodities to seek free market levels, and then make payments to producers on an annually descending proportion of the difference between market price and a revised parity price, during the next 5 to 10 years. The needed revision in the parity formula is two-fold. First, the wages of hired farm labor should be included in the index of prices paid by farmers, and, correlative with this change, farm wage workers should be protected by a minimum wage law which guarantees them 40 cents an hour for a 40-hour week, with time and one-half for overtime. Second, the present parity base period of 1910-14 should be moved forward to a much more recent period, so that advances in farm technology would be taken into account.

As a supplement to this type of price policy for the commodities not equitably priced by maintaining a high demand for agricultural products, there should be a comprehensive production adjustment program in the South and the Great Plains, which would aid cotton and wheat producers, through loans and liberal farm adjustment payments, to turn more heavily to the production of livestock, poultry, and dairy products on adequate family farms.

*An Honorable Mention Paper*

A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING

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FOR two to three years after the war, the government is committed to support prices of many farm products at not less than 90% of parity, according to the Steagall Amendment and related legislation.<sup>1</sup> For the reconversion period (i.e. probably through 1947 or even 1948), therefore, the major outlines of farm price policy have already been established.

What kind of price policy should succeed the "Steagall Period"? We shall assume that the government will be called upon to continue administering farm prices in some form, and that it will attempt to do so in the interest of general economic welfare rather than according to the wishes of a powerful pressure group. Although farmers will be the immediate beneficiaries, as long as the consumption levels of other groups with similar or lower real incomes, and national income as a whole, are not reduced as a result of the policy, that policy can be taken to improve general economic welfare.<sup>2</sup>

*Objectives of Farm Price Policy*

Farm price policy should serve three basic objectives:

- (1) *to protect aggregate farm income* against the disproportionate burden which a general collapse of prices inflicts upon the farm community;
- (2) *to induce production and cost adjustments* in line with changes in the demand for individual products.
- (3) *to permit a steady flow of farm products into consumption* (and exports) without diverting products to lower uses or reducing the total volume of farm production.

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<sup>1</sup> For a concise statement of reconversion farm price policy, see the paper by R. H. Shields, Solicitor, WFA, "Federal Statutory Provisions Relating to Price Support for Agr. Commodities." Aug. 16, 1944. U.S.D.A. (mimeo).

<sup>2</sup> See A. C. Pigou, *Economics of Welfare*, 4th Edition, London 1932, Part I, Chs. VII and VIII; and N. Kaldor, *Welfare Propositions in Economics*, *Economic Journal*, Sept. 1939.

Existing parity price guarantees meet the first objective fairly well, but fail to meet the second and third. Free market prices would tend to meet the last two objectives, but would fail to meet the first. The primary function of price policy, in the absence of an appropriate income distribution policy, should be to combine the general farm income effect of the existing parity price program with the production and consumption effects of free market prices. In fact, price policy should substantially improve upon the often erratic and unpredictable performance of free market forces.

Price policy is *not* a sufficient means for providing income parity in terms of equivalence of real-income opportunities in farm and non-farm occupations. It is utterly inappropriate for eliminating income disparities between farms or even between agricultural regions. We are sorely in need of an income policy designed to increase farm welfare—and general welfare for that matter—by improving personal income distribution and establishing minimum consumption standards of health and decency. That, price policy cannot do.

What should be expected from price policy is to stabilize the terms of exchange between farm and non-farm products as a whole, and to improve the allocation of farm resources among the various lines of production by reducing the uncertainty of future price expectations and by keeping intercommodity price relationships in line with changes in demand and costs. It is important to realize this limitation of price policy because the basic intent of existing parity price legislation is clearly to implement the goal of "equality for agriculture" and "parity income for farmers." Price policy alone cannot attain that goal.

The first two objectives of income protection and production guidance must be accomplished subject to the general welfare condition that the price policy should not reduce total consumption of farm products as a whole, nor should it have the effect of shifting consumption from lower to higher income groups. This condition can be formulated as a third basic objective of permitting a steady consumption flow without reducing aggregate farm output or causing waste.<sup>3</sup>

<sup>3</sup> Output reduction caused by under-employment of existing resources depresses welfare in two respects: it reduces total consumption, and worsens the real-income distribution, because the attendant price increase usually results in the lower-income groups restricting their consumption relatively more than the higher-income groups.



*Outlines of a Farm Price Policy*

In sketching the main features of a price policy designed to meet the three basic objectives of farm income protection, production guidance, and steady consumption flow, a fairly close resemblance to current lines of policy has been preserved. Although there are powerful economic arguments against the parity price concept, it has become so firmly inbedded in the thinking of farm organizations and in farm legislation that a complete departure from parity prices in postwar price policy may not be politically feasible. Moreover, in the absence of an appropriate income policy, the parity price concept has some merit.

Here are the outlines of the proposed program:

1. *The government promises farmers to protect agricultural income as a whole against a general price decline by supporting the over-all composite index of prices received by farmers at parity with the index of prices paid by farmers.*

Each year, the government announces in advance a set of support prices for individual farm products, whose combined index, weighted by the production goals (see below), equals the index of the prices farmers are expected to pay for the things they buy. If during the year the "prices paid" index should deviate from the anticipated level by more than a stated amount, all current support prices would be adjusted accordingly by a flat percentage increase or decrease.

When changes in technology and cost structure should bring the "prices received" and "prices paid" indices out of line, they should be adjusted by changing the base period and the composition of the indices.<sup>4</sup>

As long as farmers maintain the over-all volume of output under these conditions, their income will not suffer from a general price decline more than roughly proportional to that of other major groups in the economy. Farmers' claim for income protection rests upon the differential behavior of prices and production in agriculture and industry. Farm prices during a depression usually drop farther and faster than most

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<sup>4</sup> The present base period of 1910-14 cannot be justified on economic grounds. The most recent period of reasonably full employment, or a 5-year moving average would constitute a much more adequate base period. The problems involved in computing parity price formulae are not discussed in this paper; they represent part of the building material, not the architectural design, of a price policy edifice.

prices of non-farm products, and so does farm income. For instance, the index of net farm income per person gainfully employed in agriculture (1935-39=100) reached a low of 42 in 1932 as compared to a low of 78 in the index of wage income per employed industrial worker in 1933.<sup>5</sup>

The annual variations in the index of aggregate farm production are very much smaller than those of prices or income. The index (1935-39=100) shows a steady upward trend from 82 in 1910-14 to 133 in 1944. Since 1915, there were only 3 years (1921, 1929 and 1932) in which the index dropped more than 3 points below the preceding year. The volume of aggregate farm output, therefore, has been remarkably stable. This means that taking agriculture as a whole, a decrease in one product is usually offset by an increase in another. Consequently, aggregate farm income will be adequately protected against the effects of a general price decline by supporting the general level of farm prices.

2. *Sufficiently in advance to guide farmers in their production plans, the government announces the annual average support price and the production goal for the respective product.*

The support price for an individual product may be above or below parity, so long as the combined index of all support prices is at parity with the index of prices paid. This means that the inter-commodity price relationships are unfrozen from their base-period pattern. Considerable flexibility is thereby provided for putting individual support prices into proper relationships with respect to anticipated demand and cost patterns.

The determination of individual support prices and production goals rests upon a standardized procedure taking into account: (a) past per capita consumption rates under full employment conditions, (b) nutritional requirements and needs for special food distribution programs, (c) demand elasticity with respect to price and income, (d) cost-price ratios of farm products, (e) prospective export demand and (f) past year's general supply and demand situation modified in light of rea-

<sup>5</sup> The fact that during a period of rapidly rising prices farm income rises higher and faster than industrial income does not compensate for the extreme vulnerability of farmers in depression. They may lose farm and home long before prices recover again.

sonably certain expectations for the coming year. Past experience serves as a valuable guide in the trial and error process of matching goals with support prices and demand. For instance, if the market price for fluid milk remained well above last year's support price, while egg prices required extensive support operations the support price and goal for milk in the next year would be raised, those for eggs lowered.

If the support prices and goals so determined combine to fix farm price index below or above parity, all support prices are raised or lowered by a flat percentage to bring the index to parity.<sup>6</sup>

Forward pricing presupposes that farmers respond in their production plans to price expectations. In using forward prices as policy measures to guide production, it is the motivational aspect of how price expectations affect farmers' plans for future production that is relevant.

Farmers respond to prices primarily with respect to individual products and under conditions of alternative opportunities for shifting resources into other products which have more favorable cost-price ratios. A general decline in farm prices does *not* result in a general reduction of aggregate farm output; nor is a decrease in price of a given product likely to result in output contraction *unless* the resources of the farm can be used to produce other commodities to greater advantage.

It is reasonable to assume—and current war-time experience with forward prices seem to substantiate—that *farmers' production response to guaranteed forward prices will be stronger than their response to past prices has been.*<sup>7</sup> Fully recognizing the imperfections in farmers' price responsiveness, there can be little doubt that forward prices would facilitate production adjustments and improve the process of resource allocation.

Forward pricing would help most farmers outside the specialized cotton and wheat areas in making marginal shifts

<sup>6</sup> Administrative considerations call for supporting only the more important farm products. Feed grain prices probably should not be directly supported, but would be kept in line by the support prices for livestock products.

<sup>7</sup> See J. R. Hicks, *Value and Capital*, Oxford 1939, pp. 125–126. Forward pricing reduces the “dispersion” of possible expected prices, and hence an important risk element. A reduction in the dispersion of possible future prices has an effect on a seller similar to that of an increase of the expected price; hence, the greater the certainty of price expectation, the larger production tends to be at a given expected price.

among individual commodities in line with demand and cost changes.—In the cotton and wheat areas, however, the necessary adjustments in production and cost structure are too drastic to be induced by price measures alone. Especially in the cotton belt, these adjustments involve far-reaching changes in type-of-farming, size of farm, reduction in the labor force, increase of capital inputs in various forms, etc. Adequate price measures can help, but more intensive complementary measures are required for bringing about the desired adjustments in these areas.

3. *Price support operations are carried out by such means as will not interfere with consumption, effective utilization and distribution of current supplies.*

Stocks should not accumulate beyond the size of a reasonable storage inventory or carry-over designed to equalize seasonal or annual variations in production. If the quantity of a certain product which the regular market cannot absorb at the support price, should be larger than what the government could efficiently distribute by means of school lunches and other special food distribution programs or store for resale through regular channels, the method of supporting prices should be *supplemental payments* to farmers or middlemen, allowing consumer prices to drop sufficiently for moving the supply, instead of surplus purchases or loans.

Three principal methods for supporting prices (or returns) to farmers are available: (a) surplus purchases or loans, (b) supplemental payments to farmers for the difference between free market and support price, and (c) processing or marketing subsidies to bridge the gap between the farm support price and consumer free market price (except for normal marketing margins). Whatever the support level may be, if the market price begins to fall below that level, any one of these methods, or combinations of them, can be used to maintain the returns to farmers for their products at support levels.

To the extent to which surplus purchases can be disposed of without waste through special food distribution programs (e.g. school lunches) or through regular market channels later on, the consumption pattern may actually be improved over what it would be under free market prices. Beyond that ex-

tent, however, this method has a most undesirable regressive consumption effect, because the removing of, say 20%, of a certain product from the market would probably result in a consumption decrease of more than 20% by the lower-income families.<sup>8</sup> *Whenever the handling of "surpluses" begins to interfere with the consumption flow, consumer prices should be allowed to drop, and returns to farmers should be maintained at support levels through supplemental payments directly to farmers or, where administratively more feasible, to distributors.*

If a particular commodity required extensive support operations, its support price as well as its production goal for the next year should be lowered, and/or special provisions for stimulating its consumption (within limits of nutritional adequacy) should be made.

### *Need For Complementary Measures*

The effectiveness of farm price policy could be greatly enhanced by other policy measures. On the *demand side*, full employment and higher incomes in the lower-income brackets strengthen the demand for food products very substantially and offer the best assurance of satisfactory prices and incomes to farmers. In addition, any policy designed to increase the food consumption of the millions of families with incomes too low to afford an adequate diet results in an expanded and more stable market for most farm products.

A most constructive proposal is the "National Food Allotment Program" recently introduced as a bill in Congress.<sup>9</sup> This program would make it possible for any family, regardless of its income, to obtain a low-cost adequate diet. The difference in cost between what any participating family would normally spend for food and the actual cost of an adequate diet would be contributed by the government, as a public investment in the health and morale of the people. Any family would be entitled to purchase food coupons sufficient to buy an adequate diet, for a price representing 40% of

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<sup>8</sup> Due to higher price elasticity of demand for foods in lower income brackets. See N. Gold and M. Enslow, *The Demand for Food by Low-income Families*. Quar. Journ. of Economics, Aug. 1943. This is not necessarily in conflict with Bowley and Allen, (*Family Expenditure*, London 1935, p. 125) who contend that price elasticity increases with income. Much depends on availability of efficient substitutes, and on the pattern of the family budget.

<sup>9</sup> See Senate Bill S. 1151, June 15, 1945, sponsored by Senators Aiken and LaFollette.

its income or 25% of the face value of the coupons, whichever is higher.

According to preliminary estimates by the author, such a program would keep the general level of farm prices (excluding cotton and wheat) close to or above parity even under conditions of unemployment. Since the number of participants and the amount of government funds contributed to the nation's food expenditure would rise with increasing unemployment and falling national income, it can be expected that farm prices of food products would *not* fall faster and lower than non-farm prices, and the aggregate volume of food consumption as well as its distribution among income groups would be kept on a fairly steady keel.<sup>10</sup>

For cotton, wheat and several other export products, the success of any adequate price policy hinges to a considerable extent on foreign trade policies. The more ingenuous we are in developing export opportunities and cooperating in international trade and credit arrangements, the less drastic will be the need for production adjustments and for price support operations.

On the *production side*, special adjustment programs will be required in those areas where the desirable shifts involve basic changes in farm organization, size of farm, labor force, capital supply, etc. Such changes cannot be brought about by price policy alone. The Old Cotton South is the area most in need of such a program. The desirable production adjustments for most other important farm products are likely to be marginal in nature, and could be induced by an appropriate program of forward pricing, production goals and educational measures.

Eventually, it would be in the interest of the nation's welfare and of farmers, if the objective of income protection were taken out of price policy and placed into a well integrated income distribution policy applicable to farmers as well as non-farm families. Price policy, then, would be concerned only with furnishing guidance in the process of resource allocation, and with stabilizing the consumption flow over time.

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<sup>10</sup> The effect of the program on the level of food prices has three major determinants: (a) government contribution to the participants' food expenditures, (b) increase in food expenditures by non-participants in their desire to maintain previous consumption rates, and (c) supply elasticity of foods. The second (b) of these may readily reach the order of magnitude of the first (a). The third (c) is bound to be small in the short run.

*An Honorable Mention Paper*

A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING

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WE OUGHT to settle one fundamental question right at the outset. After the end of the war, will there be need for any "price policy" for agriculture at all, other than the policy of leaving agricultural prices to the automatic control of the open market?

There is much to be said for the open market. It operates automatically and impersonally, oblivious to political pressures. Year by year, it calls forth the production of goods in the quantities demanded, continuously correcting for changes in demand and supply, and rationing the goods out to the consumers who offer the most for them.

*Controls Are Needed to Help the Open Market Work Smoothly*

But in spite of these good features, the open market system is not a satisfactory regulator of agricultural production and consumption, particularly in the short run. It is unsatisfactory because of three inherent characteristics of agricultural production and consumption.

1. First, wide fluctuations in crop yields take place from year to year because of variations in weather. This creates surpluses one year, and shortages the next. This makes prices fluctuate so much that they are erratic and confusing guides to farmers. The year-to-year variations in the production and prices of crops that are used for livestock feed also cause variations in livestock production and prices, thus confusing the price picture for livestock as well as for grain.

2. The demand for farm products is stable in the physical sense; people need fairly constant quantities of food and clothing from year to year. But the demand expressed in terms of prices varies greatly as the national income goes up and down with variations in industrial activity. This causes severe fluctuations in the prices of farm products, as for example when the farm price of corn fell

from 80 cents for the 1929 crop to 32 cents for the 1931 crop, although the two crops were equal in size.

3. There is an inherent time lag in farmers' production responses to changes in prices. Poultry and egg production can respond within a few months, but the production of most field crops cannot be changed for a year, until the next crop is harvested; most kinds of livestock require more than a year; and some crops take several years. Thus price aberrations persist over considerable periods of time before they can be corrected.

This erratic behavior of agricultural prices has a disturbing effect on farmers. On commercialized and mechanized farms, fixed charges are high; variations in gross income cause much greater variations in net income. Some farmers—"inner and outer's" try to outguess the market, and often guess wrong. Others follow a more stable program, and do not change much even when changes are needed. All of them have to leave a considerable margin for safety, and the nation gets less food and fiber than if farmers had more accurate guides for their production plans.

These three features of agricultural production make open market prices too erratic to be good guides or regulators of agricultural production and consumption. They require that specific price controls be developed, not to replace or circumvent the free market, but to help the free market to function more smoothly and accurately in the interests both of producers and consumers.

### *Objectives of Agricultural Price Policy*

The objectives of this price policy are several in number. They can be divided into two groups—those objectives that relate to supply, and those that relate to demand.

#### *1. Objectives with respect to supply*

Different crops require different objectives with respect to supply; they therefore require different policies. One policy is required for crops that are used primarily for livestock feed—as a raw material for the production of meat and other livestock products. A different policy is required for crops that are used directly, or after only machine processing, for human consumption. There are further differences within these two major groups.

(a) *Livestock feed crops*: The objective of the price policy for crops that are fed to livestock should be to stabilize market supplies



—that is, to take out the erratic fluctuations from year to year that result chiefly from good and bad weather.

Feed crop supplies and prices can be stabilized by storage and unstorage operations which withhold the excess over average production in good years and release it in poor years. Government commodity loans, perhaps supplemented at times by government purchases and sales, appear to be a suitable technique for stabilizing supplies.

Under this policy, the price of corn would remain stable from year to year, except for changes in demand. This would help to stabilize the prices of the other feed grains, although complete stability might require storage programs for those grains, too. This stability in the price of livestock feeds would stabilize livestock production and prices and stabilize the major sources of income to corn and livestock producers. Farmers then would have more accurate price guides for their crop and livestock production plans.

This program would cause livestock feed growers' incomes from their crops to vary directly and proportionally with variations in the size of the crop. This variation could be largely overcome by a program of crop (yield) insurance, such as is already in effect for corn, wheat and cotton. In any case, the stable prices for livestock feeds would stabilize the production and prices of the major source of income, livestock.

A program of this sort would also reduce costs of production and distribution all along the line from producer to consumer; for it would stabilize livestock production, and require productive and distributive capacity only large enough to handle average production, not large enough to handle peak production at some times and stand half idle at others, as in the past.

(b) *Human food crops.* The preferable objective for crops that are used directly (or with only machine processing) for human consumption is different from the stable price objective for feed grains outlined above.

Stable prices would not work in the case of perishable crops like potatoes, for example. Those crops cannot be stored from one year to another. A large crop has to be consumed in the year when it is produced. If prices are held at the average level, the excess over average production will not move into consumption; it will go to waste. The only sensible policy is to let the prices for perishable crops vary inversely with the size of the crop. In cases where the

elasticity of the demand is approximately unity, prices could vary inversely and proportionally with the size of the crop. This would return constant gross income, rather than constant prices, to growers. In other cases, gross incomes would vary as well as prices.

In the case of durable human food or fiber crops, the situation is more mixed. Wheat is one example; cotton is another. Their prices could be held constant from year to year by storage operations, and this would permit complete utilization of the processing and distributive machinery, which would need to be only large enough to handle an average crop each year. This advantage, however, might be more than offset by two disadvantages; constant prices would unstabilize growers' gross incomes, and storing the excess from a large crop would cost more than to move it into consumption at lower prices.

The prices of these crops could best be controlled, therefore, not by a single price floor for each crop, but by a schedule of price floors varying inversely with the size of the crop. The central figures in this price schedule would be the price for an average crop. These price schedules, like the single price floors (in the form of loans) used for livestock feed crops, should be announced shortly before breeding or seeding time for the crop or product concerned. And they should extend for one production and marketing period into the future.

## *2. Objectives with respect to demand*

Changes in the demand for one or a few specific products can be met to some extent by changes in production. The most effective way to bring about a change in production is to change the price.

But this method does not work so well with general changes in demand affecting all products. If the general demand declines substantially after the war, for example, a general decline in agricultural prices would help to keep consumption up, but it would not have nearly so much effect on total production as changes in relative prices have on relative production.

This is apparently true even when organized campaigns are made to control agricultural production, like the AAA programs of the 1930's. In past reduction programs, most of the acres taken out of one crop were put into another; or if they were held idle, their fertility increased. Declines in acreages were offset by increases in yield, so that except in the case of cotton, acreage control did not

reduce production below previous levels. Presumably, the same thing would happen again if production control were attempted after the war, unless more stringent restrictions were placed upon farmers, and there would be objection to that.

Furthermore, even if production restrictions were made effective by the use of more stringent controls, reducing production would not increase farm income much. The reduction in quantity would partly or completely offset the increase in price. And it would increase hardship among people with low incomes who would not be able to buy enough food for a decent diet. Taken all around, programs to reduce agricultural production appear undesirable as well as unlikely to succeed.

### *Measures to stabilize demand.*

Measures of a different kind are needed to meet general fluctuations in demand. They transcend agricultural policy. A whole congeries of national measures is needed to maintain a high level of employment and income in the entire economy. These measures lie outside the bounds of this paper.

If these measures are not entirely successful, recourse can be had to food distribution programs for low income groups. These programs can be directed only to a very limited extent toward specific foods, and even when conducted on a one, two or three billion dollar scale, can only partially offset changes in general demand. But they can help. The food money goes to low-income people who spend it almost as fast as they get it, and that helps to maintain general purchasing power. A program of this sort improves nutrition and helps stabilize prices at the same time.

Efforts to expand exports by means of export subsidies are obviously undesirable from a national point of view. They subsidize foreign consumers at the expense of our own, yet they are not appreciated by foreign governments, most of whom have passed anti-dumping laws. To the extent that these laws are effective, they nullify the effects of export subsidies on prices and exports, so that all the subsidies do is transfer the subsidy money from our government to other governments.

### *Bases for Prices*

If the objectives and policies outlined above are accepted, several specific questions need to be answered. At what levels are the prices

of the various farm products to be set? How are these levels to be determined?

One answer might be: set the prices at parity. Parity provides a specific price for each crop. The term parity carries a connotation of fairness, and parity has been widely accepted and used as a guide for price policy for over a decade.

Basically, parity prices are simply the prices that existed during 1909-14 (or other base period). These base prices are multiplied by a single current index figure which reflects changes in farmers' cost since that time.

Parity prices are unsuitable guides for price controls, however, because they impose a pattern of prices which is in most cases more than 30 years out of date. In view of all of the changes in production and consumption that have taken place during those years, parity prices would result in the production of too much of some products and too little of others, so that serious surpluses and shortage would exist side by side. And parity prices per unit of production are extremely inaccurate measures of the thing that really counts—*net income per farmer*.

Altogether, parity is so inaccurate as a measure of farmers' economic status, and so out of date and backward rather than forward-looking as a guide for production and consumption, that it is not a workable basis for agricultural price controls.

Then what is?

### *A Workable Basis for Price Policy*

A workable basis for agricultural price controls can be outlined, in terms of procedure, as follows:

1. The first step in this procedure is to estimate consumption requirements each year for each kind of food and fiber. These estimates are to take into account productive capacity, producers' incomes, and consumers' desires and consumers' incomes. They also are to take into account any rationing of high-income consumers or subsidization of low-income consumers that may be needed; and they are to include the prospective governmental as well as private demand. The War Food Administration and USDA has been following this procedure during the present war.

2. The next step is to translate these estimated requirements into physical production goals for agriculture. The USDA has been doing this each year since 1942. These goals are physical objectives

in quantitative terms, and disagreements concerning them can be settled on objective grounds.

3. When these physical quantities have been agreed upon, the prices that will call forth the production of those quantities of each kind of food and fiber in the goals, and move them into consumption, can be determined. This determination can be based upon the reaction of producers and consumers to various prices in the past, with proper adjustment for changes in the conditions of supply. The prices can be worked out by much the same procedure as that which is followed in the preparation of "Outlook" reports. Impartial experts can be called in from all over the country, and their views pooled with those of economists in the USDA.

These three steps are presented separately in this exposition, for purposes of clarity. In actual operation, they would need to be conducted to some extent jointly, since the quantities involved in the first two steps are dependent in some degree upon the prices established in the third step, and conversely.

4. When the prices for each product have been worked out, they are to be published along with the physical production goals and used extensively as the basis for "Outlook" informational programs. These prices are to constitute the bases for loan rates and price floors and schedules which will enable each farmer to plan his production for the year ahead in such a way as to maximize his net returns and, in total, make the most productive use of the country's agricultural resources.

This procedure has been in effect with most non-basic products during the war. What is needed now is to bring agricultural price legislation up to date, along the lines that have been followed in actual practice now for several years.

Some mistakes are likely to be made in the settling of the price floors, especially initially. They can be corrected in the case of durable products by storage operations coupled with appropriate changes in subsequent price floors. These changes could be made automatic by providing in advance that whenever the accumulated stocks grew to exceed the size needed for stabilization purposes, the loan rate should be reduced by the same percentage.

In the case of perishable products, if the market price turned out to be lower than the price floor, the difference could be made up by direct payments to farmers. Thus the nation would subsidize farmers, but for increased production, not for decreased production.

*Limitations of Price Control*

There is some danger that this program, good as it may be in itself, would be distorted and perhaps wrecked by pressure to misuse it simply to raise farm prices. That might leave farmers worse off than before.

This is a real danger, and vigorous and widespread discussion of the program would be required to ward it off. If farmer's incomes need to be increased, raising agricultural prices is not the way to do it. More than that, raising agricultural prices cannot do it. Raising prices cuts down consumption and stimulates production. Surpluses appear which, in the case of perishable products, have to be dealt with quickly before they spoil. The only way to deal with them is either to let them spoil, as in the case of eggs in 1944, or to lower the price. Public opinion will not long endure the deliberate spoilage of food, and lowering prices to where they would have been in the first place means that the attempt to raise prices has failed.

The same thing is true of durable products. The only difference is that storing the surplus merely postpones the day of reckoning, and makes the eventual settlement more adverse to agriculture as accumulated surpluses break prices below where they would have been if no direct price raising had been attempted. Direct price raising is like putting a match directly to the thermostat. That does not raise the temperature of the room; it lowers it.

If the aim is to increase farmers' incomes, that cannot be done by direct price raising without throwing a monkey wrench into the distribution machinery and setting in motion forces which will soon break prices down. If farmers need larger incomes, the way to get them is to control prices only for the stabilization purposes outlined in the main body of this paper; to let goods continue to flow through into consumption; and to increase farmers' incomes by direct payments to farmers.

These direct payments could be made partly on a per unit basis (per bushel, bale, etc.) as a reward for production; partly on a production-practices basis (so much for liming, terracing, rotation, etc.) in the interests of conservation; and partly on a standard-of-living basis (so much to bring the individual standard of living up to the desired nutritional, health, educational, etc. level). These proportions would need to be changed year by year, area by area, and farmer by farmer, as conditions changed.

This method of raising farmers' incomes would be susceptible to grave abuse. There is nothing to hold in check the setting of the payments unduly high—nothing comparable to the surpluses that pile up if *prices* are set too high. The only check, aside from the depth of the public purse, is the fact that in the long run the payment method could succeed only in raising farmers' incomes to levels comparable with those that would be attained in other lines of production. If it proceeded beyond that point, it would eventually result in an accumulation, not of surplus food but of surplus farmers. It would retain more people on the farm, who would provide the total farm income pie into smaller pieces. This would eventually raise the question whether subsidies to maintain larger numbers of people in an already overcrowded industry should be continued. The problem of numbers could not be solved by restriction of entry, for agriculture already produces nearly 50 percent more people than necessary to maintain a stationary farm population.

Thus price controls plus other measures can bring farm incomes up to where they belong—that is, up to equality with incomes in other comparable lines of production. But they cannot, except briefly, keep them above that point.

**A PRICE POLICY FOR AGRICULTURE, CONSISTENT  
WITH ECONOMIC PROGRESS, THAT WILL  
PROMOTE ADEQUATE AND MORE  
STABLE INCOME FROM FARMING**

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**A** POSITIVE price policy for agriculture will surely be a part of our national program for many years to come. That policy is expected to promote adequate and more stable income from farming. It may also have a far reaching influence on the nation's future economic, political and social development. Its influence will spread to foreign lands, and be reflected from foreign shores. For these reasons it is extremely important that our country's future agricultural price policy be developed with the greatest care.

History shows an unmistakable trend toward definite price policies for agriculture. Earlier attempts to influence farm prices were tariffs, freight rate controls, and monetary policies. Later approaches are more direct—government loans, diversion programs, marketing agreements and production restrictions. During the war direct price controls have increased. For two to three years following V-Day Congress has pledged price supports for most important farm products at the relatively high level of 90 percent of parity.

National price policies are not limited to agriculture. Minimum wage standards have been developed for labor, and recognized by law. Federal and state governments regulate public utilities, banks, insurance companies and many other types of businesses. A national agricultural price policy is only a part, but a very important part, of a general development involving virtually every phase of the nation's economy.

The primary aim of a price policy for agriculture is to promote an adequate and more stable income from farming. This can be accomplished by adopting a policy which will enable farmers to increase the proportion of sales made during periods of strong demand. Although such direct benefits to agriculture may be substantial, indirect benefits may be even more important.

A sound agricultural price policy will help to stabilize employment and industrial production at a reasonably high level. Agri-



cultural economists have shown that farm income is quite responsive to changes in the income of industrial workers. In emphasizing this fact, too little attention has been given to the importance of farmers' purchases in supporting a high level of industrial production. Though this point needs much additional study, farmers obviously offer a tremendous potential market for farm machinery and equipment, building materials, home furnishings and appliances, automobiles and other products of industry.

A solution of the farm price problem, retaining farmers' traditional freedom to produce and to buy and sell, will do much to maintain freedom of enterprise and democratic government in America. Contrariwise, if agriculture accepts a rigid price and production control program it will greatly strengthen other groups asking for special government favors. In asking for and accepting such favors agriculture, industry and labor would surely lose their economic and political independence and become wards of a dictatorial government.

The successful solution of the farm price-income problem is sociologically important. Rural people are a stabilizing influence in the life of the nation. They furnish a young, vigorous and industrious population to renew our cities. Many leaders in business and public life come from farms. Farm life must be made economically attractive to insure a sound inheritance to the future generations of Americans.

Any practical price policy for agriculture must meet two basic tests. First, it must be politically sound in order to be adopted. Second, it must be economically sound, in order to operate successfully after adoption.

To be politically sound any price policy for agriculture must be fairly simple. It must be readily understood by farmers, farm leaders, and members of Congress. Neither farm people nor legislators will support schemes which they do not understand. Simplicity will also facilitate the administration of any policy.

To be politically sound an agricultural price policy should be a development of already accepted policies. Farmers do not want to be guinea pigs for frequently changing experiments. Furthermore, farmers expect consistency in those who represent them. Farm leaders and members of Congress cannot be expected easily to abandon policies for which they have labored for 10 to 30 years.

To be politically sound the national agricultural price policy must offer definite assurance to the producers of major commodities that they will be protected against drastic price declines. Labor has some measure of protection against loss of income in unemployment compensation. Agriculture, which produces at full capacity even during depressions, also merits some protection.

In order to be economically sound, i.e., to operate successfully, a price policy for agriculture must assure to consumers an adequate supply of food and other agricultural products at reasonable prices. There should be no paying farmers to refrain from producing needed food. Such a program would bring bitter opposition from most of the nation's citizens. The objectionable legislation would soon be eliminated, but much more important, much of the constructive agricultural legislation of recent years likely would be thrown out in the house cleaning.

To operate successfully an agricultural price policy must permit substantial fluctuations in market prices. This is necessary to balance annual and seasonal changes in production and supplies, to offset changes in demand, and to prevent the accumulation of large surpluses. If the price of any farm product is maintained perennially at an artificially high level, its consumption will be restricted and its production increased. This will cause a large surplus to accumulate, and force the government to attempt severe restrictions on production.

To operate smoothly a price policy for agriculture must not require continual rigid production controls. Except in periods of temporary emergency, each farmer should be free to produce any crops, livestock or product which he thinks offers a reasonable chance for profit. Neither should the government try to direct agricultural production through frequent changes in price policies. Experience in both war and peace demonstrates that this is not practicable. Consumers efficiently guide production by buying things they want most. If any farm product sells at a consistently low price, it indicates that consumers want something else.

Finally, the national agricultural price policy should be recognized as only a part, but a very important part, of the national economic policy. The government has great influence over economic conditions through its control of fiscal and monetary affairs. The nation must recognize this fact, and manage the national debt and

the annual budgets to promote an adequate and relatively stable national income. If this is not done, no agricultural price policy can maintain an adequate and stable farm income.

The nation's future agricultural price policy should consist of three complementary parts: (1) An improved standard of fair prices (2) a variable system of price supports, and (3) a new soil improvement program. ✓

The new standard of fair prices should be an improvement of the present parity formula. This formula has served fairly well, but is subject to criticisms as to the general level of parity and as to the relationship among the various parity prices.

Some persons argue that the level of parity is too high. They point out that the base period was an unusually profitable one for farmers, and that, except during wars and in the base period itself, farm prices have never been at parity for any substantial length of time. These facts may be granted; but they do not prove that the present formula gives a general level which is too high for the future. Two facts offer strong evidence that the present formula will give a reasonable general level for the next 10 or 20 years. First, for more than 150 years prices of agricultural products have been rising in relation to prices of all commodities. While the 1909-14 relationship was unusual for that time, it became normal about 1940. The second fact is that whenever, during the last 25 years, industry has approached full employment and production, prices of farm products have approached parity.

Other persons, including some farm and political leaders, argue that the present parity level is too low. Bills to raise parity prices have had strong support both in and out of Congress. A few conservative farm leaders have effectively opposed this legislation. The strongest argument for higher average parity prices is that farm wage rates, which have advanced very sharply, are not directly reflected in parity prices. This argument will be eliminated or reduced after the war.

Considering all the evidence there appears to be no impelling need for changing the general parity level, at least until after several years of postwar experience.

While the general parity level is satisfactory, adjustments of parity price relationships among commodities are badly needed. This has become increasingly apparent since the imposition of war-time price ceilings and price support programs based on parity

prices. All agricultural prices are inter-related. Corn and hog prices must be in proper relationship or trouble will develop. Corn and cattle prices, feed and milk prices, feed and egg prices, and the prices of various crops must also be in proper adjustment. These relationships gradually change with changes in production methods and costs. The use of large scale machinery reduces the cost of producing crops. Price relationships also change from variations in the relative demand for different commodities. Thus the demand for cotton was reduced when women quit wearing five or six petticoats and dresses requiring ten or a dozen yards of material.

A careful consideration of every possible base period from 1909 to 1944 is convincing that the years 1935-39 are the most satisfactory for establishing parity relationships among the various farm products. This period has several advantages. It bears approximately the same relationship to World War II that 1909-14 bears to World War I. The years 1935-39 are a base for numerous indexes. Prices in this period reflect most of the changes in production methods and costs, and the changes in demand for various farm products, which have occurred since 1910. The 1935-39 period already has considerable popular support.

The acid test of any proposed parity formula is its performance. A formula using 1935-39 price relationships, with an adjustment to maintain the 1909-14 general level, performs remarkably well. It raises parity prices for livestock and livestock products. It lowers parity prices of most crops. These adjustments are desirable since crop production has been mechanized and cheapened more than the production of livestock and livestock products.

The parity price for cotton would be lowered nearly 22 percent. This is a drastic cut, but a justified one. Cotton has been in increasingly serious trouble for more than 20 years. The once huge export market largely has been lost. The domestic demand has been greatly reduced, because of changing styles and habits and the competition of rayon and other synthetic fibers.

The postwar years will bring even greater competition from synthetic materials. Furthermore, the impending mechanization of cotton growing and harvesting, like the introduction of the cotton gin just 150 years ago, will make for much lower production costs and prices. If present cotton parity prices and government loan levels are continued, cotton production will be further over-expanded. The nation's taxpayers will be burdened with the cost of

vast surplus disposal and production control programs, and cotton growers will be subjected to severe restrictions.

The needed adjustment in parity prices should be made promptly. This will encourage many cotton growers on poor land to find employment in defense work or in the new industrial developments to follow the war. Others can turn to more diversified farming to produce food for the increasing population in cities. The earlier this adjustment is made, the easier it will be for cotton growers.

Under the proposed new formula, parity prices for rice and the small grains would be lowered from 12 to 28 percent to bring them more in line with actual values. The corn parity would be unchanged, but parities for hogs, beef cattle, lambs and wool would be from 7 to 23 percent higher, making for a better relationship between feed costs and livestock prices. Butterfat and milk parity prices would be 3 percent and 7 percent higher respectively. Chickens would be slightly higher and eggs slightly lower. The principal oilseed, fruit and vegetable parity prices would average somewhat lower. All these changes are economically justified.

The second part of the price policy for agriculture should be a price support program based primarily on variable commodity loans. Loan levels should be adjusted to reflect variations in demand and supply by relating loan levels to parity, and making an adjustment to reflect the supply situation.

For each of the major crops two supply figures should be determined—a "normal supply" and a "maximum supply." The normal supply would be the amount needed for domestic consumption, export and normal carryover. The maximum supply should be about 110 percent of the normal supply, and might vary for different crops. Both the new crop and the carryover should be considered in determining the supply.

When the supply of any major crop is normal or less, a loan of about 75 percent of the parity price should be available. For larger supplies the loan level should be lower, dropping to about 55 percent of parity when supplies reach the maximum. This principle is not entirely new in crop loan programs. It was included in the earlier corn loan legislation, although in that case no allowance was made for carryover.

This variable loan level will itself be some inducement to farmers to make needed crop acreage adjustments. Since loan levels will fall sharply with increases in supplies, over-production

will not be encouraged. At the same time lower loan levels and prices will encourage consumption and tend to prevent the accumulation of large surpluses. This loan program will keep government losses at a minimum, and will give producers substantial protection against unreasonable price declines.

The third part of the price policy for agriculture should be a soil improvement program closely associated with the crop loan program. All producers should be permitted, and those receiving crop loans should be required, to participate in this soil improvement program. Participation should involve a variable reduction in the acreage of crops involved in loans and a corresponding increase in the acreage of land used solely for soil improvement purposes. Some inducement, in addition to loans, should be offered for soil improvement. A large part, probably 50 percent or more, of the inducement should be reimbursements for expenditures for limestone, phosphate, potash, legume seed, and other soil improvement materials. In general, reimbursements should be made only for soil improving materials used on the land being used exclusively for soil improvement purposes.

The actual details of this program should be developed by each state. This would permit desirable adaptations to local conditions. The program should be worked out by or under the supervision of the best qualified agency in every state, the Extension Service. In order to maintain essential uniformity each state program should be subject to the approval of the United States Department of Agriculture.

The annual appropriations for the soil improvement program should be relatively small in most years. Appropriations should be increased substantially when farm prices and income fall and large numbers of farmers wish to participate in the crop loan and soil improvement programs. Detailed estimates of the actual cost have not been made, but preliminary studies indicate that it would be only one-third to two-thirds as much as for the agricultural programs of 1933 to 1940.

The agricultural price policy outlined here is not spectacular or novel. Neither is it presented as a cure-all for the problems of agriculture. It is both conservative and progressive. It is a policy built upon tried and tested principles. Unsatisfactory features of earlier policies have been eliminated. Substantial improvements have been made over the program provided for in present legisla-

tion. These improvements include modernization of the parity formula by the use of 1935-39 relationships among commodities with an adjustment to maintain the 1910-14 average; a graduated scale of commodity loan levels ranging from 75 to 55 percent of parity to reflect variations in the supplies; and the coupling of the loan program to a new and more positive soil improvement program.

This price policy for agriculture is politically sound; it can be adopted. It provides adequate protection to agriculture. It is relatively simple. It is in essence an improvement on already accepted policies. This price policy is economically sound; it will operate successfully. It will help to stabilize farm income. It will help to stabilize employment and national income. It will maintain relatively free markets. It will require a minimum of government regulation, and a minimum of money from the public treasury. It will maintain a maximum of individual freedom for each farmer. It will assure to consumers adequate supplies of food and other agricultural products at reasonable cost. It will protect vital soil resources. It will provide for increased production during periods of strong demand. In short, if adopted this price policy for agriculture not only will promote adequate and more stable income from farming, but it will also go a long way toward maintaining a high standard of living, the freedom of initiative and enterprise, and democratic government in America.

## WARTIME EXPERIENCE IN PRODUCTION ADJUSTMENT RESEARCH AND FUTURE POSSIBILITIES\*

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FOR 5 consecutive years the United States Department of Agriculture and the 48 States have cooperated in research designed to service wartime agricultural production. In the last 4 of these years, State Production Adjustment Committees have issued reports dealing with the possibilities and problems of agricultural production in each State. Each year there has been the objective of developing a basis for the next year's production program. In addition, supplemental analyses have been made that have varied from year to year. This article describes this very considerable endeavor, offers an appraisal of the service it has rendered during wartime, and with this background, considers the value similar work might have if continued in time of peace.

### *Early War Impacts, 1940-41*

Long before our entry into World War II, it became apparent that the conflict would significantly involve all sectors of the economy even should we remain a non-combatant Nation. State and Federal agricultural workers together with farmers would need to contribute to the building of workable agricultural programs. The task was large and exceedingly complex but through participation in the analysis of production problems and of ways and means of overcoming them, an understanding would be gained that would facilitate carrying out the programs developed. In the fall of 1940, 60 specialists from 9 agencies of the Department of Agriculture cooperated in the preparation of a mimeographed report called "Regional Adjustments to Meet War Impacts" which was widely circulated. It was made the basis of a one-day session at the National Outlook Conference, and contributed importantly to developing the early war food programs. The opening sentence briefly explained the purpose of this report, "The broad effects of war and the National defense program are extremely important to agriculture as a whole, and the specific

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effects of these impacts need to be considered in terms of farmers and groups of farmers in different regions who may have to make important changes in their farming systems."

With the passage of the lend-lease act and the announcement of our position as "the arsenal of Democracy," it became apparent that agriculture must gird for a battle of production of extended duration. The objectives underlying wartime production-adjustment research were several—to do our full share with a minimum of serious depletion of fertility reserves, and little if any irreparable damage to soil resources; to supply the growing demand for the essential products of agriculture quickly and efficiently with the least possible disruption of current systems of farming; to see that necessary production adjustments were, so far as practicable, in line with the long-time best interest of different sections of the country. These objectives have given continuity of purpose to the studies despite the changing nature of the work, year by year.

Cooperation between personnel in the U.S.D.A. and the Land-Grant Colleges and with State representatives of Federal agencies interested in agriculture was started informally early in 1941. The job was that of providing the factual basis needed for effective operation of the Nation's wartime food programs. The regional offices of the Division of Farm Management and Costs of the Bureau of Agricultural Economics assumed primary responsibility for uniformity in approach to the problem in 1941 and made available a series of regional reports.<sup>1</sup> These grew out of work with the States in which estimates were made of the "1943-45 expected" acreage of crops, numbers of livestock, and production, as contrasted with other estimates of the "long-time desirable" acreages numbers and production for the same broad areas where agricultural opportunities and problems were generally similar. The reports were chiefly devoted to outlining means of facilitating the adjustments that were needed immediately, and to suggesting measures anticipated to be necessary in the years 1943-45. A principal aim of the work in 1941 was to provide a basis for meeting the needs of the defense program in ways that would not conflict with the development of a stable agriculture.

The resulting reports, issued in June of 1941, were revised in the fall and used as a basis for State and county distribution of the Nation's first production goals for agriculture—the goals for 1942.

<sup>1</sup> Seven mimeographed reports under the general title, "Farm Adjustments to Meet Defense Needs."

*The Grass Roots Approach, 1942*

December 7, 1941, and our formal entry into the war, gave added impetus to the need for developing an all-out production program for agriculture, and the need for guidance stemming out of careful nation-wide research was intensified. It was decided therefore to improve on the techniques used in 1940 and 1941 by arranging for the fullest possible cooperation with research committees in each State—committees designed to utilize the services of production specialists in every field of agricultural endeavor and to bring their knowledge and experience into play in sizing up the adjustments that would be needed in each local area to permit it to make a maximum contribution to the war.

To obtain, in the limited time available, the suggestions of as many State people as possible for conducting this nation-wide project, a tentative procedural guide was developed in the U.S.D.A. and taken to the meeting of the American Farm Economic Association, in New York, December 27–30, 1941. After review by a large number of the State agricultural economists in attendance, a revised guide, "War Production Goals and Their Attainment," was prepared and distributed to those working on the project. State committees were provided with uniform assumptions regarding requirements for agricultural commodities in 1943, and what these might mean in terms of farm prices for agricultural products in each State. Statements were prepared on the prospective farm labor supply in 1943, and the prospective availability of production supplies such as farm machinery, feed, fertilizer, insecticides, and fungicides. The probable situations with respect to farm credit, transportation, marketing and processing facilities were also discussed.

With these working tools, State committees developed two types of estimates, (1) "1943 feasible" acres, numbers, and production for all commodities and (2) estimates of "potential" acres, numbers, and production for certain specified vital war commodities such as soybeans, peanuts, pork, and milk. Estimates of "1943 feasible" were for a balanced agricultural production considering competitive relationships between commodities at the assumed prices and with as many safeguards as possible under wartime conditions against unwarranted depletion of fertility reserves. Estimates of "potential" production, on the other hand, were an inquiry into the degree of expansion possible in different

areas for vital war products; to the exclusion of others if that became necessary. Three questions were posed. (1) What is the maximum limit of physical expansion of the commodity in each production area? (2) What enterprises would be displaced to permit this? (3) Under what conditions could this be brought about? The results of this phase of the work proved very useful in revealing areas that had additional production capacity for strategic products, and later aided in directing special efforts toward expansion into those areas where the greatest increases could be expected.

Genuine understanding of farmers' production possibilities and problems can be achieved only by a knowledge of how farms are organized and operated in different sections of the country, and how they differ in inherent productivity, in alternative opportunities, and in the degree of flexibility they have for meeting changing conditions. Much information of this type is currently available, both in the Land-Grant Colleges and in the Department; but in order to obtain information specially applicable for the 1942 study, the State Committees were encouraged to develop their estimates from a grass-roots foundation. This involved delineation of production-adjustment areas within a State—areas in which production problems and opportunities were essentially similar. Sample counties were then selected within the adjustment area for intensive study. In these counties members of the State committee met with small groups of farmers who were operating farms of similar types and sizes to discuss production problems for the year ahead. A typical farm, as currently organized and operated, was usually made the focal point of discussion. As the illustrative farm plan was developed both farmers and committee members could visualize the problems that would need to be surmounted to permit similar farms to make their maximum contribution to war needs in the new year. In many instances the discussions carried through to the point of determining the effect of proposed changes on income for the illustrative farm plan. This whole process of consultation and participation by farmers helped pave the way for later use of research findings in educational programs.

Information obtained from these discussions was later combined with other data, and interpreted in the light of the judgment and experience of members of the State committee and other workers. Estimates were then made of "1943 feasible" and "potential"

production first for sample counties, then by adjustment areas, and finally, by adding areas for the State as a whole.

Forty-eight State reports were prepared in 1942 based on detailed work in 327 adjustment areas. These reports gave special emphasis to discussion of attaining suggested production. Understanding of the problems ahead was in no small measure due to the direct contact with producers in the sample counties. The State reports were summarized nationally and made available to the Washington committees who were developing suggested agricultural goals for 1943, and a subsequent report afforded opportunity for administrative review of suggested goals prior to their revision and public announcement.<sup>2</sup> Thus the State reports not only aided in formulation of national goals but formed a reliable basis for their distribution among the States, and the work later proved useful in the process of distributing State goals to counties in many States.

#### *Agriculture's Maximum Wartime Capacity, 1943*

As war tightened its grip on the Nation, the various sectors of our production front began to compete more keenly for production resources. Labor was needed on farms, in factories, and in the military services. Nitrates were needed not only for fertilizer but also for gun powder, which had a prior claim. Steel was needed for countless items of war equipment, and manufacture of new farm machinery was severely limited. It seemed possible, however, that at some point in the war's progress food could become more important than additional planes, guns, and tanks—so much so that agriculture might have a higher priority than industry for use of more of the scarce resources, in order to increase food production.

If such conditions were realized and food continued to grow in importance what would be agriculture's maximum wartime production capacity—maximum in the sense of a balanced production of essential agricultural commodities, with each area making its largest possible contribution? Some areas would need to make drastic changes in farming systems, the only reservation being that against irreparable damage to the soil. Such was the nature

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<sup>2</sup> U.S.D.A. mimeographs, "Wartime Farm Production Adjustments, Parts I and II," Aug. 1942 and "Agricultural Production for 1943, Suggested State and Regional Distribution of Tentative Goals," Nov. 1942.

of the Nation-wide production adjustment research undertaken cooperatively during 1943—again with two types of estimates: (1) “Maximum Wartime Capacity,” as outlined above, and (2) “1944 Wartime Capacity,” designed primarily as background for the 1944 production goals program.

Statistical summaries of the State reports containing these estimates were mimeographed and made available to national goal committees in August and September of 1943.<sup>3</sup> By now this work had become a definite part of the goal-making process—a foundation of production analysis which could be combined with available information on food requirements to construct a program of production goals.

An unpublished analytical report, “Our Food Potential,” was prepared from the work done in 1943. This analysis indicated the tremendous capacity of our agricultural plant—even when operating under wartime stringencies—and gave considerable insight into what could be done immediately, and within a relatively few years of all-out operation. To illustrate, during 1935–39, we were providing food for 130 million people measured in terms of 1943 average per capita diets. By 1943, wartime agricultural production had been so adjusted that an additional 40 million were being provided for. Assuming only normal rates of technological improvement but continuation of wartime conditions, the study indicated that it would be possible to provide for 200 million people within 2 years after 1943 and maintain the 1943 level of nutrition. This would have been accomplished mainly by producing more of the crops used for direct human consumption and less of feed grains and forage for livestock. By more rapid adoption of improved practices, by land development, prevention of food waste, and better utilization of food, the all-out potential within 2 years appeared to be food production for 220 million people. Within 10 years of the same type of intensive effort, 380 million people could be supplied with diets equivalent to those the average civilian was obtaining in 1943. The study outlined how these overall changes would affect the production of each agricultural commodity and indicated what would be needed in farm labor and production supplies to achieve these ends. Attention, also, was given to the commodity-value relationships that would be necessary to keep production in balance.

<sup>3</sup> U.S.D.A. mimeograph—“Agriculture’s Maximum Wartime Production Capacity,” (Statistical Supplement) Sept., 1943.

A byproduct of these studies conducted in 1943, were mimeographed reports on uses of farm land, yields of crops, and rates of feeding.<sup>4</sup> These were made available to members of State Production Adjustment Committees for review. Each committee could then compare its own estimates with those made in adjacent States and explore the reasons for the differences noted. These were intended to improve the statistical estimates of potential production and to provide a better basis for subsequent work.

*Setting up a Postwar Bench Mark, 1944*

The cooperative work undertaken in 1944 was again divided into two phases—estimates of 1945 wartime capacity and a postwar phase. The first was the year-to-year phase—designed to develop an analytical background for use in determining the 1945 production goals. Two mimeographed reports were issued summarizing the 48 State reports on this work.<sup>5</sup>

The second or postwar phase of the work in 1944 represented an attempt to visualize a desirable pattern for agricultural production after the transition from war to peace. This longer look ahead seemed appropriate because our agricultural plant has changed greatly from that of prewar days. In some regions wartime needs have accelerated desirable shifts, but in others the present pattern of agriculture if long continued would have serious repercussions. In addition to changed emphasis in crop and livestock production, technological advances in the broadest sense of the term—new machines, new varieties, additional fertilizer and divers kinds of improved practices—have, under the spur of wartime necessity, exerted a tremendous influence toward increasing agricultural production. Wartime habits of production once acquired are not easily laid aside; and consideration of their long-time implications should be of value in shaping agricultural programs for intervening years.

Any study primarily concerned with the distant future places the investigator on uncertain ground. This is particularly true if the end objective is that of *forecasting* what is likely to come to pass. In this instance, however, the aim was not to prophesy what

<sup>4</sup> U.S.D.A. mimeographs, "Farm Land—Acreage in Principal Uses by States"—Nov. 1943, "Crop Yields Per Acre by States"—Feb. 1944, and "Estimated Quantities of Feed Consumed by Livestock for the Year Beginning October 1, 1943"—Apr. 1944.

<sup>5</sup> U.S.D.A. mimeographs, "Production Adjustments in Agriculture, 1945," Sept. 1944 and, "Farm Land: Acreage in Principal Uses by States, 1945 Wartime Capacity," Sept. 1944.

farmers *will* do, but rather to obtain the best possible technical judgments of what *it would pay* them to do under assumed conditions of prosperity in agriculture.

With the objective of developing estimates that would serve as bench marks, or reference points, indicating the direction adjustments should take in intervening years, the States reported on a desirable pattern of balanced agricultural production within a setting of full employment, high industrial activity, a large volume of international trade, and a high level of national income—in short, prosperity conditions. No one set of assumptions regarding the future is likely to be realized in all respects and it would be desirable to develop estimates under several sets of possible alternatives. A second set of uniform assumptions involving a lower national income and considerable unemployment was made available for those States that wished to develop the work on alternative levels. About one-fourth of the States worked on more than a single set of estimates.

A preliminary analytical report together with a statistical supplement summarizing the 48 State reports on this postwar phase have been mimeographed for review and eventual public release.<sup>6</sup> Under the prosperity conditions assumed, this report indicates the postwar possibility of increasing gross farm production by one-third over the 1935–39 average, one-eighth more than in 1943, and one-twelfth above the record year of 1944.<sup>7</sup> This would be possible with relatively little change in the cropland base, with somewhat fewer and larger farms, and with farm employment nearly 10 percent below the 1935–39 average. Significant shifts would occur, however, in the use of cropland, and the bulk of the increased production would come from increased crop yields induced by more widespread use of the improved practices that it would be profitable to adopt.

New types of problems confronted those developing the bench mark estimates. Most of these occurred in evaluating the present importance of improved practices in production and their probable significance in the postwar period under consideration. They

<sup>6</sup> U.S.D.A. mimeographs, "Farming Adjustments After the War—Possibilities Under Prosperity Conditions," June 1945 and "Farming Adjustments After the War—Possibilities Under Prosperity Conditions, Statistical Supplement," May 1945.

<sup>7</sup> A new gross production index has been constructed which includes farm produced power as one of the components. See forthcoming U.S.D.A. publication, "Farm Production in War and Peace" by Glen T. Barton and M. R. Cooper.

involved adjusting the yield increases obtained on experimental plots from the use of a practice or a combination of practices to allow for the probable differences when used under farm conditions. They also involved estimating the current use of the practice or practices, and the probable degree of influence on the State average yield of a crop, assuming practices were adopted to the extent they would pay.

For many years research workers have been developing new methods which if adopted would result in more efficient farming. They are aware of the considerable lag between introduction of a practice and its widespread adoption. They know, perhaps, better than any other group, the vast difference between what farmers *will* do and what it would *pay* them to do under given conditions. Inertia is hard to overcome in any group, and sometimes the non-economic factors outweigh the economic incentives to change. When farmers' incomes are reasonably satisfactory and production presents no problems of especial difficulty, relatively few will exert extra effort to improve farming efficiency. In times of depression, however, when the margin between cash costs and selling prices narrows or disappears, there is greater urgency in discovering new ways of reducing production costs. These often take the form of scaling down out-of-pocket costs rather than the adoption of practices that would call for increased cash outlay. But in wartime when shortages of farm labor and supplies threaten to curtail production, farmers are more willing to increase cash inputs since satisfactory returns seem more assured. Perhaps a similar tendency would exist in any extended period of full employment and prosperity conditions.

In making the postwar bench mark estimates of acreage, numbers, and production, care was taken to keep the estimates on a *would pay* basis, ruling out the influence of the *probable* rate of adoption of practices, or what farmers *will* do. The bench mark estimates, however, have value only as they indicate what is profitable under the assumed conditions. As such they can serve as direction finders, or objectives toward which to work in intervening years.

Despite the difficulties that beset the path of anyone attempting a look into the distant future, the work has value in appraising our present position in relation to desirable future objectives. Improved studies of a similar nature will need repeating only at infrequent



intervals—but often enough to keep the long-time bench marks useful because they are in line with changing conditions. Desirable physical relationships may not change materially but changing economic conditions may make it desirable to accept other physical alternatives that may be available.

*Suggested Production for the Year Ahead, 1945*

Cooperative production-adjustment research has continued during 1945 but a somewhat different approach has been initiated. Uniformity in procedure has been held to the minimum necessary to national summarization of suggested levels of production for 1946 with State reports developed to have primary usefulness *within the State*. In addition, the States have suggested supplemental cooperative studies in the production-adjustments field that would have particular interest to the State or a group of States. During wartime, research guidance on the over-all problems of what to produce and where to produce it has been so necessary that funds and personnel of State and Federal agencies alike have been concentrating on supplying this need. Greater attention should be given to other types of production problems and particularly to those of State-wide and region-wide interest as soon as conditions permit.

*Wartime Accomplishments of Production-Adjustments Work*

*In Washington:*—The results of production-adjustment work can perhaps best be reviewed by examining how they are used both in Washington and in the various States. To appreciate how they are used in Washington, it is necessary to understand something of the goal-making process. Early in the spring of each year a Production Goals Review Committee is organized in the USDA. Its duty is to review tentative goals set up by subcommittees who have studied individual commodities or groups of commodities, and to recommend production goals for the ensuing year, together with the action needed to assure their achievement. Sixteen subcommittees with about eight to a dozen members each, comprise the commodity committees for 1946 goals. Membership on these working committees is confined to those within the Department of Agriculture who can contribute most to a study of production prospects and the needs for a given commodity or group of commodities for the year ahead. The representation among departmental agencies is widespread, including specialists in crop and livestock production, in production economics, in

agricultural statistics, in marketing, in storage, in agricultural supplies, in prices, in food requirements and allocations, as well as representatives of organizations that work continually with farmers in the field, such as the Agricultural Adjustment Agency and the Extension Service.

These commodity subcommittees meet frequently through the summer and fall, considering the needs for and the problems in producing the commodity or group of commodities for the new year. The following excerpts from a memorandum issued by the Goals Review Committee, "Development of the 1946 Production Goals—Suggestions to Commodity Committees" will indicate the important place given to production-adjustment (production capacity) research in goal development. This has been no less true in preceding war years:

"In developing the production goal report for 1946, the committee should give careful consideration to the following topics; and should include a short summary on each, along with the tables and tabular material:

- (1) Requirements
- (2) Production capacity
- (3) Suggested goal
- (4) Labor and production supplies
- (5) Marketing facilities
- (6) Prices (ceiling and support prices)
- (7) Recommendations for goal achievement

"The production capacity study is being carried on for the fifth year in cooperation with State agricultural colleges. Individual State reports giving suggested levels of production are due August 1 and a national summary of State reports by September 1. This report attempts to ascertain potential agricultural production in view of requirements and availability of production and marketing facilities, to determine the rapidity of use of the maximum productive capacity, and to furnish a basis for distributing production goals according to the best use of resources in each region."

Each year the States have forwarded to Washington a limited supply of the reports containing the results of their production-adjustment research. These have been placed conveniently in various agency offices and a circulating library has been maintained to further extend their usefulness. They have been widely consulted as a source of information about local areas and for details that it was not possible to make available in the national summaries of the cooperative work.<sup>8</sup>

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<sup>8</sup> The printed annual report of the War Food Administrator, "Food Program for 1944" to James F. Byrnes, Director of the Office of War Mobilization, carried a major chapter entitled "United States Agricultural Production Capacity" which further recognized these Nation-wide studies.

Dramatic and unpredictable changes in the fortunes of war may cause significant month to month variations in prospective food requirements. This uncertainty introduces factors extremely difficult to work with, because demand is frequently out of line with the prospective supply that the Production Adjustment Committees have suggested for the new year based on earlier estimates of prospective requirements. In fact, the goals-making process is essentially that of reconciling prospective demand and supply, and out of these deliberations suggesting the best possible level of production. Nevertheless, a comparison of the officially announced national goals, commodity by commodity, with the recommendations made by State Production Adjustment Committees demonstrates a high degree of agreement.

Of equal importance with the definite quantitative suggestions made by State Committees regarding goal levels is the understanding gained of production problems being faced in important local areas. This has filtered into the goal-making and programming process in at least two ways; first by reference to the texts of the State reports and second by discussions in the commodity committee and review sessions with those who participated in production-adjustments work in the field. It has been the policy of the Bureau of Agricultural Economics to make one man available to work with the Production Adjustment Committee in each State, to facilitate the uniform approach that was needed if the work was to be summarized nationally. For the most part these men were supplied from the regional staffs of the Bureau of Agricultural Economics. The regional leaders of the Division of Farm Management and Costs, who followed this work closely as it progressed in the States, have come to Washington each year to participate in the national summarization of the State reports and in the review sessions.

The production-adjustment studies have made a good beginning in developing techniques through which administrators in Washington are kept aware of the problems of local production areas. They not only have focused attention on the areas with additional capacity for strategic products and on local hindrances to additional production; but they have been an important source of the guidance farmers needed in maintaining balanced production in local areas and on individual farms. Good administration of future agricultural programs—programs containing sufficient flexibility

to permit increasing efficiency in the use of our agricultural resources and general prosperity and stability for farmers—will be enhanced by studying these wartime procedures for features suitable for peacetime use.

*In the States:*—The most obvious use of the production-adjustment studies within the States during wartime has been that of affording opportunity to participate in developing the production level for each commodity, and once this is mutually agreed upon, the equitable breaking down of each State goal into county goals as a basis for work with farmers.

The possibilities in production-adjustment research were recognized in the Land-Grant Colleges as early as 1935 when they cooperated with the Program Planning Division of the Agricultural Adjustment Administration and the Bureau of Agricultural Economics in conducting a Nation-wide study focussing on the production problems of localized areas and regions. The science of agriculture has developed along specialized lines—courses being given in poultry husbandry, dairy husbandry, animal husbandry, farm crops, and horticulture. Research necessarily must be developed in specialized fields if fundamental results are to be achieved, but there is real need for synthesis of results and close attention to how these enterprises fit together on the farm.

The wartime need for dairy products, for example, has been great but this does not mean that every farmer will make his greatest contribution by introducing a dairy enterprise or expanding one already in operation. By considering the way in which farms are currently organized and operated in a particular area and the local variations in prices of farm products, in soils, in topography and climate, each farm enterprise is placed in proper perspective with relation to available alternative enterprises. A final step is that of reconciling the needs for dairy products from the area (the enterprise approach) with the way dairying fits into the organization of individual farms and working out means of encouraging adjustments that will permit each farm to make its largest contribution to vital war production. The 1935 study and the wartime production adjustment studies have had the advantage of concentrating the ability and experience of experiment station, extension, and other agricultural workers on the production problems of farms in a particular area rather than on a particular enterprise. As such they have been more productive in developing

patterns of agriculture that would permit each area to utilize its resources more fully in the interest of local and national welfare.

The wartime production-adjustment studies have stimulated additional interest in this approach, and a number of States are finding that experience gained in preparation of the State reports, as well as the report itself, furnish an excellent frame of reference for the State extension program for the year ahead. The generalized market outlook for hogs for the coming year is useful information but in addition, Bill Green farming in Boone County, Iowa, needs the prospective outlook for hogs interpreted in terms of the outlook for other alternative enterprises available in Boone County, and even better, in terms of farm set-ups of similar type, size, and physical condition to the one he is operating.

This approach was included in the cooperative production-adjustment studies conducted in the spring and summer of 1942 and is still continued in a number of States. Where funds and personnel have been available to develop this degree of localization, the value of the work as a basis of formulating State agricultural programs is readily apparent, and State workers are anxious to continue work along similar lines even after wartime needs are past. In a few States circumstances have confined the work to the minimum required to develop State figures for inclusion in the national summaries. In these cases estimates have necessarily been made for the State as a whole, with but little foundation of supporting analysis by adjustment areas or by groups of farms of similar type, size, and physical condition. The resulting product, while permitting completion of the national picture, has had but limited usefulness for work within the State.

In obtaining the judgments of State committees on production incentives and needed facilities, production-adjustment research has been less successful. While these needs were stressed, no uniform approach was developed for reporting on these phases. It has been difficult, therefore, to summarize effectively the reactions obtained, and to give them proper weight in developing action programs. Improvement of this phase should not be difficult.

#### *Usefulness of Production Adjustment Research After the War*

With 5 consecutive years of experience in wartime production-adjustment research, we should be in a position to determine whether any elements of this work have values sufficient to war-

rant their continuation in postwar years. Many of the time-consuming phases carried out during wartime, such as estimating potential production and maximum wartime production capacity, have served a useful purpose, but no reason exists for their repetition in the foreseeable future. Similarly, the postwar bench marks developed in 1944 and projected to the close of the transition period (assumed to be around 1950) will need repetition only when they no longer serve as useful indicators of desirable directions of change.

*Research Uses:*—As a continuing activity, greatest usefulness both nationally and in the States, would appear to be in brief but thorough research consideration of production problems and prospects for the year ahead—analyzing these, however, within a carefully worked out framework of desirable longer time objectives for the Nation, the State, the adjustment area and ultimately, the farm. Such work, on a continuing basis, would keep up to date the reconnaissance background for more detailed production-adjustment research. It would by no means represent all that should be done in this field in each State. Rather, as workers attempted to make sound appraisals of desirable adjustments for representative farming situations, area by area for the year ahead, the gaps in current information would be increasingly revealed, and cues would be furnished regarding the nature and extent of detailed research needed, and what revisions should be made in longer time adjustment objectives. These gaps would not all be in the economic field. They involve the whole field of input-output relationships and many would be in the physical sciences. For example, there is great need for more detailed knowledge locality by locality of the yields that can be expected from crops planted on specific soil types and handled under specific systems of cropping. Desirable adjustments on farms are fully as dependent on reliable information of this kind as they are on information regarding the market outlook for important commodities for the year ahead. The profitableness of different production alternatives are dependent on both these factors.

Where alternative opportunities are available both in the choice of farm enterprises and in methods of handling the land it is possible that untried systems of farming may in some instances prove more profitable than those now in common use. We might even look forward to establishment of a number of pilot farms

where drastic departures from current methods of organization and operation would be tested before recommending their general adoption. Such pilot farms should be complete units representative of physical conditions in the areas where they are located.

As we approach the postwar period there will be increasing need for indicating to the producer of cotton, wheat, and soybeans—to name but a few commodities—what the outlook is likely to be and what alternatives are open to him. In addition to illuminating the national situation this outlook must be brought definitely into focus with regard to the physical and economic conditions of his own area and his own farm. To illustrate, the Bureau of Agricultural Economics is cooperating with a number of States in a careful 2-year study of the postwar position of the oil-bearing crops, soybeans and flax. Results of this work should throw considerable light on the comparative advantage of soybean and flax production in different parts of the United States in competition with oil production in other countries that supplied so large a part of our prewar oil consumption. This background should aid in encouraging continued production of these crops only in those areas and on those farms where they are likely to be profitable in postwar years.

Problems of considerable magnitude will face the South after the war. Increasing competition from other cotton-producing areas, the growing popularity of synthetic fibers, mechanization of the cotton harvest—all are forces to be reckoned with. The impacts of these changes will vary markedly from area to area, making careful studies of the long-time alternatives to cotton production imperative. Drastic changes will be necessary in some localities to avoid disaster. But such changes can not be made overnight. They need to be clearly visualized as desirable longer-time objectives, year-to-year production planning being conducted within this framework.

Problems of similar magnitude confront those who would achieve stability of farming in the Great Plains where, in spite of variable weather, wheat is frequently produced in excess of normal domestic needs for human consumption. Can exports of wheat be profitably expanded, can an increasing portion of the crop be diverted to feed or industrial uses, or must systems of farming be developed that place less dependence on wheat as the main source of income? Here again are problems for longer-time research that need con-

sideration before we can be sure that year-to-year planning is moving in the right direction.

Important values accrue if all States continue a uniform approach so that the results can be summarized nationally, thus gradually perfecting our knowledge of the entire agricultural plant to the mutual benefit of individual States and of the Nation. This would provide the understanding needed in developing State and national agricultural programs with sufficient flexibility to permit each area to make the best use of its resources with consequent benefit to the farmers concerned.

During wartime it has been possible to gain a better picture than we have had previously of the principal uses of cropland. A number of gaps still need filling in—such as accounting more adequately for multiple uses of land, ascertaining more definitely the different kinds of pasture, differentiating between idle and fallow cropland, etc. We need to go on still further to a more adequate accounting for other land in farms and how it is used.

Along with this need for refinement in statistical data is that of keeping the entire job to an essential minimum so that the fund of data accumulated through the years reflects only that which is recognized both in the States and in Washington as necessary to an adequate understanding of the agricultural production problem. Consideration should be given to scheduling an annual production-adjustment appraisal so the best talent of the Land-Grant Colleges could participate in giving the work adequate attention within a limited period of time. Our returning military forces will probably tax college facilities during the regular school year. The work could probably best be done during the latter part of July and in August.<sup>9</sup> For those who would develop the State report and perhaps test the effect of desirable adjustments on incomes of representative groups of farms, 6 weeks or 2 months might be necessary. For most of the research and extension personnel who would participate, the input would be considerably less.

Several differences from procedures as followed in wartime would operate to keep lost motion to a minimum and permit the doing of more effective work. With the uncertainties of war and relief needs removed, it should be much easier to inventory the

<sup>9</sup> This ignores the need for earlier production guidance on fall-sown crops such as winter wheat and winter vegetables. Perhaps these are best handled as at present, with production adjustments committees giving brief but thorough consideration at an earlier date in the States where these crops are important.



stocks of food and fiber in the national storehouse, to appraise probable production of the current year, and to indicate with greater certainty the levels of production that appear necessary to meet probable demands for each product in the new year. This would be particularly true if these framework materials are developed *after* the July crop report is issued. The prospective availability of farm labor, machinery, and production supplies could also be indicated in advance with greater certainty in peacetime. Under these more definite assumptions regarding the national need for various agricultural products and the over-all conditions under which they may be produced, it should be possible to furnish within the State much more specific guidance than heretofore on the best uses of resources in each producing area and on farms of given sizes, types, and physical condition.

The work already done in each State has provided the historical background on trends in acreage of crops, numbers of livestock, and normal levels of production that are desirable for considering future adjustments. State Production Adjustment Committees are already so familiar with the job that it was thought unnecessary to prepare a procedural guide for the work being done this year. Dependence was placed on previous experience plus the use of the same kind of forms from State to State to provide the uniformity necessary for national summarization of results.

Some may feel that this approach could not properly be called research and that it falls more logically in the sphere of the extension economist. Others may feel that regardless of who would undertake the work, it is not sufficiently "profound" to be described as research. If the work were undertaken annually, however, as a piece of short-time research having first call upon the services of production specialists, and research and extension economists alike for a given period, and if the approach were of the intensity previously described for the work of 1942, it could serve the farming public and the Nation as a whole with an unusual degree of effectiveness.

*Extension and Other Uses:*—A major objective of production-adjustment research would be that of improving the foundation for an effective agricultural outlook program within the State. The task would be but half completed when professional agricultural workers have developed specific suggestions for the important farming situations. There would remain the further step

of organizing an extension approach that would bring the information before the specific groups of farmers whose farms and production were involved. This is important for it is out on the land that a major utilization of the results of research takes place. In their study, discussion, and formulation of plans for action farm people are, to a great extent, the architects of their own educational effort. A number of States have already made considerable progress in putting their wartime research results to work, and this story can be told most effectively by those who have had this experience. If research results have been formulated for farms that are representative of important types, sizes, and physical conditions, it follows that extension meetings should be so organized that the farmers directly concerned are called together.<sup>10</sup> In fact, as indicated earlier, some States invite such farmers to participate in *developing* the research results, thus combining research and extension effectively.

Members of the State Production Adjustment Committee who participated in the study could assist in discussing the results with farmers to the advantage of both. The exchange of views between the producer and the researcher should result in a more generally useful, more realistic research product.

The desirability of carrying out the research aspects of production-adjustments work within a framework of longer-time objectives has been stressed. Some such framework is equally necessary as background for extension work growing out of the research. Some progress was made during 1944 in developing long-time objectives and in appraising our present position with respect to them. The results of this work are proving very helpful in formulating national outlook information. Similarly, the formulation of longer-time objectives for local areas will greatly aid in opening up many new opportunities for effective outlook work on a local area basis.

The July-August timing of the research phase would keep it sufficiently up-to-date to make it applicable at the time of the outlook meetings. When the State reports have been summarized nationally the tentative story of desirable production adjustments for the year ahead is available. This can then be compared with the prospective market outlets and wherever wide discrepancies are noted, consideration can be given to variations from the previous levels of pro-

<sup>10</sup> For this approach described in more detail and applied to farm planning see the author's article in this JOURNAL, 23 (4): 826-830, 1941.

duction suggested in each State report. Departures from these estimates can then be discussed that would bring probable supply and probable demand more nearly into equilibrium, at the same time drawing most of the product from the areas that can produce it most efficiently. State and Federal workers could develop these suggestions jointly at the National Outlook Conference.

Within the State these revised suggested levels of production would later be appraised in two ways; first, in the light of the revised market outlook for the new year and second, in the light of desirable long-time objectives. State reports would then be revised, if necessary, to prepare them for effective outlook work in localized areas throughout the State.

Many types of outlook information on markets and prices are already available. An important supplement to these can be supplied by improving and expanding our local and national knowledge of production possibilities and making it available in usable form. A well rounded outlook program should result.

The research aspects of future work in the production-adjustment field have been continually emphasized in this discussion. State and Federal research personnel drawn from many subject matter fields would necessarily take the lead in providing the factual basis both for short-time and longer-time phases of the work. During the war State Production Adjustment Committees have included liberal representation from extension and operating agencies. In some instances these individuals have served as chairmen of the State Committees and in many others they have made effective research contributions as well as serving in a review capacity.

To insure effective use of the results of production-adjustment research it is highly desirable that those responsible for extension and operating programs participate in the development and review of the work.

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This article is not intended as a plea for the unaltered continuation of a procedure built up to meet wartime needs. It is intended rather as a start in exploring, jointly with cooperating agencies, the possibilities in one phase of the general field of production-adjustment research as a continuing process, and the ways in which State and Federal research groups can join forces to come out with the largest socially useful product,

## DISCUSSION

G. A. POND

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Mr. Johnson has presented an excellent summary of the experiences in production adjustment research of the past four years. His appraisal of future possibilities also represents a valuable contribution. The reviewer will confine his remarks to elaborating the discussion as it applies to individual states, particularly with reference to the desirability of production adjustment research as a permanent project.

Agriculture is a highly dynamic industry and adjustment in production must be a continuing process in peace time as well as in time of war. Internal and external factors are constantly changing. Annual state and federal outlook reports for more than twenty years indicate that this fact has been generally recognized.

Outlook work prior to World War I was largely the function of economic workers and often confined to those in the extension field. The Regional Planning Project of 1935 was the first general recognition of the importance of broadening the scope of planned farm production. With the increasing volume of agricultural research has come increased specialization among workers. No one individual or class of workers can be sufficiently familiar with all lines of agricultural technic and with economic facts and methods of analysis to handle the problem alone. On the other hand it becomes increasingly important with this growing specialization among workers that each group see their field in its relationship to the broad problems of farming as a business and agriculture as an industry. Only in this way can our agricultural research program be most effectively directed toward the solution of the problems of adjustment that constantly confront farmers. The economist must keep abreast of developments in agricultural technic and the subject matter worker must recognize the relationship of his specialized field to the broad objective of a stable prosperous agriculture.

The production adjustment programs have developed a technic that may well be continued in permanent adjustment or outlook research projects within the states or preferably as a cooperative undertaking between the several states and the United States Department of Agriculture. Not only has the general plan of approach been developed but a larger amount of statistical background information has already been tabulated. Each year current production data can be added and the tabulations kept up to date with relatively little effort. Such projects should serve greatly to increase the scope and value of outlook information available to the farmer.

The more general over-all planning such as was involved in the 1935 Regional Planning Project or in setting up the Post War Bench Mark of 1944, as Mr. Johnson points out, does not need repeating each year. It should, however, be repeated at intervals of perhaps 5 to 10 years. These studies serve a valuable purpose in orienting research. They call attention to gaps in available information and suggest new lines of needed research and new methods of interpretation.

Mr. Johnson very properly stresses the fact that state data must in many cases be broken down by smaller areas in order to deal more effectively with local situations and alternative production opportunities. This suggests the necessity for more emphasis on type-of-farming area delineations and of keeping these adjusted to shifts in production within the state. Both subject matter and economic research may well be planned more definitely in terms of specific production areas and their peculiar problems.

Production adjustment planning has served a useful purpose in calling attention to deficiencies in the factual information needed for effective planning. Considerable information is already available as to the acreage and production of the principal crops and the numbers and production of the different classes of livestock. Mr. Johnson calls attention to the lack of data covering such things as multiple use of land, acreages of different kinds of pasture, amounts of idle or fallow crop land, and the utilization of "other land in farms." In addition a more detailed breakdown of state information by counties is needed. More information is also needed regarding shipments of feeder livestock and feed between states and between areas within states. With the need for this addition data well established it should be much easier to interest the federal and state crop and livestock reporting services in setting up the machinery to secure it.

The production adjustment research of the past four years would have been well worth while from the standpoint of the individual states even though the results had not been used in planning national production goals. It has served to develop an improved basis and procedure for state outlook work. It has served more effectively to coordinate agricultural research work in the states and especially to develop more cooperation and mutual understanding among research workers in the subject matter and economic fields. It has brought to light some of the deficiencies in the agricultural information needed in planning agricultural production on an area and state basis. To continue it in the future with such modifications as experience may dictate seems highly desirable. It is one war product that can be converted to peace time service with little adjustment or alteration.

## DISCUSSION

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This article gives in compact form a description of the Production Adjustment study carried on cooperatively by the BAE and the land-grant colleges. It is well done and deserves to be reproduced and made available to all who may be interested. Many of the federal and state personnel who have worked on the project at one time or another, but have not been in continuous touch with it, will appreciate this initial statement of objectives and historical background. Others who may contribute to the project in the future and young workers entering the field of agricultural service will want to review this article to obtain a perspective of the work that

has been done to view our total agricultural production from the standpoint of both the wartime maximum and the potential continuing production for future needs.

Further comments on the historical outline of the project to date is unnecessary except that the idea of viewing our agricultural production plant as the basis for adjustments was conceived in peacetime and the Regional Research Project carried out in 1935 was the forerunner of the Wartime Production Capacity or Adjustment Studies. The 1935 project is recognized in this article under the "Wartime Accomplishments of Production Adjustment Work—In The States," but is not mentioned as a part of the historical development of the project.

The article establishes four major points: (1) The scope of the project is wide, covering all types of agricultural production in the 48 states. (2) The reports of the project contributed materially toward the establishment and guidance of wartime production programs. (3) The project will be of value in the future to farmers as they develop or revise plans for their farms. Specialists and agency representatives who contribute to or who are otherwise familiar with the reports of this project are better able to assist farmers develop plans of organization and operation. (4) The results of the work are proving valuable in formulating national outlook information and in turn may be of considerable assistance in the application of outlook material to local areas.

The "Extension and Other Uses" is a brief section worthy of attention because it deals with the direct use of the results from the project. The indirect benefits, such as developing an overall picture of agricultural production for research, extension, and agency representatives, and providing a basis for establishing goals, have been greater than the direct use of the material with individuals and groups of farmers.

It is stated that there is little need to repeat such items as the potential production, maximum wartime capacity, and postwar benchmark. Probably not, because these parts of the program were developed for particular situations. However, considerable basic information was assembled and used which should be revised and brought up-to-date. Some of the most important items of basic information are:

1. The classification of soils according to their inherent productivity and erosion hazards and recommended land use.
2. The total amounts of basic fertilizing materials (limestone, rock phosphate, and potassium) needed by soil types and by counties; the total amounts of special or mixed fertilizers needed on the various yearly soil types for recommended cropping systems.
3. The extent of need for each erosion control practice.
4. Amounts of feed used per unit of livestock production in different areas of the state and under different types of production.
5. Grain shipments for commercial uses.

Some of the reports on the special studies, particularly the postwar benchmark, gave evidence of difference in interpretation of the assumptions and in the application of basic information. While conditions may vary by areas and the same type of information is not readily available in all states

a common understanding of assumptions and methods of applying research information to total production would help secure more comparable results.

The project in Illinois has served the purposes for which it was developed. A high degree of cooperating exists among the departments of the College and the agencies of the USDA within the state, and while a few persons must necessarily be responsible for the details, many have contributed information, recommendations, and judgment necessary for a completed report. Those who contributed directly have a better understanding of the total production problem which will directly or indirectly influence the work they do in either research or extension. The reports of the adjustment study have been used directly in the establishment of production goals, first in Washington, when the preliminary state goals are determined and then when the preliminary goals are reviewed and approved or adjusted by the state group. The state goals are then broken down into county goals. These county goals are given wide publicity, and farmers use them as general guides as they make their production plans for the year ahead, although there is a gap between the county goals and the farm, which the farmer must bridge as best he can.

Since actual production takes place on farms it is only logical that eventually the goal procedure will be refined and extended to determine goals for individual farms. During this process, however, goals may lose their original purpose—to serve as guides—and become requirements which would be most unfortunate because it would tend to relieve the farmer of making his own determinations for goals and production plans. Farmers, then, must necessarily have a prominent part in bridging the gap between county goals and farm goals.

The suggested uses of the project for research point toward the farm as the place where action takes place and all agricultural information becomes effective. The objective of the study is for the farmer to evaluate all production and economic information and make adjustments before rather than after a need is evident. That is a big order but it is in the right direction to be most useful to farmers individually and to the nation.

The element of time enters into making adjustments and may need some special attention as a part of a research program. How long does it take to make an adjustment? How much time elapses from the conception of an idea until it begins to pay dividends? For example: If a person decides to grow more and better legumes he determines where it is to be grown, tests the soil, applies the limestone and other fertilizers needed, sows the seed, waits a year and more to harvest the crop by pasturing or by cutting and storing, feeds it to livestock and finally markets the livestock. If the legume is to be used solely for soil improvement, another period of time will elapse until the following crop is marketed as grain or through livestock. Considerable time has passed and, the companion item, costs have accumulated. If the person decides upon two major adjustments such as growing more and better legumes and establishing a beef cow herd, he has not only the lapsed time to consider but the timing of both with each other and with the other operations and enterprises.

Pilot farms are mentioned as a possible means of testing drastic departures from current methods of organization and operation. Wide difference of opinion exists as to the effectiveness of such farms in testing the economic significance of anything because economic conditions cannot be simulated. However, the idea should be reviewed carefully to determine if it can contribute in giving direction to some changes in methods of production.

The Extension uses to date have been more indirect than direct. Only minor attempts have been made to take the results of the study direct to the farmers, but by entering into the formulation of the goals and by forming a background they do contribute materially to extension programs, both for the state and the counties.



## MECHANIZATION OF THE COTTON HARVEST

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LESS progress has perhaps been made in the application of machine labor saving devices to the production and harvesting of cotton than to any other major crop in American agriculture. Prior to World War I, about the same amount of labor was required to produce a pound of cotton as in 1860. Since then, some progress has been made in utilizing power equipment and improved machinery in seedbed preparation and in the cultivation of cotton, which has reduced somewhat the total man hour labor requirements for cotton production. The fact, however, that a large amount of hand labor is still required to harvest the crop and the presence of a reasonably adequate supply of unskilled cheap hand labor has hampered progress in the application of improved tools and techniques in the planting and cultivation of cotton. Consequently, much of the cotton crop is still produced with hand labor, which accounts in large measure for the low output per worker in cotton production.

### *Cotton Production Inefficiencies and Exchange Penalties*

The income status of the vast army of cotton field workers is thus adversely affected by the fact that the product of their toil is exchanged in the market place with goods much of which have been produced by skilled workers using tools that have multiplied their efficiency many fold. A man cultivating with a hoe or working with his bare hands in the harvesting of cotton is not a competitive equal in terms of earning power with a man working with a tractor or other farm power equipment.

The cotton field worker's income has been further adversely affected by the fact that the product of his toil has been sold at a price determined in a competitive world market, whereas, most of his purchases have been in a sheltered tariff protected market or at prices not otherwise fully competitive. Credit has been scarce and interest rates high for a great many years.

Thus production inefficiencies, the sale of cotton in an erratic and unstable world market, exchange penalties, and high credit costs, explain in large measure why the cotton producers of the South receive the lowest real as well as monetary income of any group of workers in America. The amelioration of some of these problems is

within the reach of the cotton producers themselves; whereas, other important causal factors can be dealt with only from a national or international level.

### *Cotton Outlook Unfavorable*

The current outlook for cotton is such that apparently something definite and tangible will have to be done in the postwar period even to safeguard the present unsatisfactory economic position of the cotton producer. The ever increasing competition of producers in other countries and the phenomenal increase in synthetic and substitute products for cotton in both the domestic and foreign markets will no doubt complicate the cotton situation immeasurably.

TABLE 1. ESTIMATED GRADE AND MANUFACTURING WASTE OF COTTON

Grade	Percentage waste
Good middling	6.3
Strict middling	7.2
Middling	8.0
Strict low middling	9.2
Low middling	11.8
Strict good ordinary	14.0
Good ordinary	16.5

Source: "Cotton Fiber and Spinning Testing Service," War Food Administration, United States Department of Agriculture, September 1944, p. 10.

The steady development of the quality and adaptability of rayon staple fiber together with a decline in price has put this fiber in a position to compete with cotton not only in the finished goods market but in the cotton mills as well. The mill operator has a choice of using rayon staple fiber in place of or in combination with cotton. In the future the price and quality of these competing fibers will be the major factors determining the product or combination of products that will be used.

It is predicted that the price of rayon will be still further reduced following the war. Due to losses of fiber in the processing and utilization of cotton, it must sell for approximately one-tenth less than rayon in order to be on a competitive price basis with rayon. See table 1.

### *Reduced Production Cost Needed*

Considering the low economic status of cotton producers generally, a possible reduction in the relative price of cotton means that it will have to be produced more cheaply, and that as a matter of

equity and economic necessity the exchange penalties previously mentioned will have to be removed. Reduced cost of production can be effected through the usage of better tools, more efficient practices, and the production of better quality cotton. The improvement of the exchange status of the cotton producer can be accomplished through appropriate public policy and programs.

This first report is concerned primarily with the progress and possibilities of reducing the cost of producing cotton through mechanization of the cotton harvest.<sup>1</sup> If the slow and tedious method of hand picking cotton can be eliminated, the major obstacle to complete mechanization of cotton production will have been largely eliminated.

### *Cotton Harvest Labor Requirements*

The amount of hand labor required to harvest an acre of cotton varies with the yield, stand, prevalence of weeds, variety of cotton, and physical characteristics of the soil on which cotton is grown. For the country as a whole, approximately 57 percent of the unweighted man-hour labor requirements for the production of an acre of cotton is required for harvesting. In the Mississippi Delta Area, from 60 to 65 percent of total labor is required for harvesting, depending on the degree of mechanization; and for the irrigated areas of the West, 67 percent of total labor is for harvesting. It is thus obvious that the perfection and general use of a mechanical cotton harvesting machine will make possible a drastic reduction in the man labor required for the production of an acre of cotton. See table 2.

### *Low Farm Machinery Ratio*

The amount of machinery on Southern cotton farms is considerably less than that found in other farming areas of the country. Comparisons are indicated in table 3. Even though farm machinery value ratios to crop acreage and to farms are slightly higher for the Delta plantation areas than for nonplantation areas of the Cotton Belt in the Southeast, the resultant labor efficiency within the plantation area has been largely with crops other than cotton.

Increased use of power and machinery in seedbed preparation and in cultivation have resulted in somewhat higher cotton yields per acre and more efficient utilization of land and labor in these proc-

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<sup>1</sup> A subsequent report will deal with mechanization and other labor saving practices as they relate to the planting and cultivation of cotton.

TABLE 2. APPROXIMATE MAN-HOUR LABOR REQUIREMENTS PER ACRE FOR SELECTED CROPS<sup>1</sup>

Selected crops	Man-hour labor requirements per acre
Alfalfa	20.0
All hay	4.7
Barley	9.6
Beans, snap	131.0
Corn	27.3
Cowpeas	19.0
Cabbage	109.0
COTTON <sup>2</sup>	133.0
Irish potatoes	68.0
Lespedeza	8.9
Oats	9.0
Peanuts	63.0
Soybeans	16.0
Sweet sorghum	14.0
Sweetpotatoes	114.0
Sorgo syrup	130.0
Tomatoes	114.0
Watermelons	59.0

<sup>1</sup> Adapted from *Labor Requirements for Crops and Livestock*, M. R. Cooper, W. C. Holley, H. W. Hawthorne, and R. S. Washburn, Bureau of Agricultural Economics publication, F. M. 40, 1943.

<sup>2</sup> Man-hour labor requirements taken from Mississippi Agricultural Experiment Station Bulletin 387, "Farm Labor Requirements in Mississippi," Paul S. McComas and Frank J. Welch, 1943.

esses. So long, however, as labor must be kept on the plantation for hoeing and picking regardless of labor efficiencies in the other production processes, neither labor nor management can take full

TABLE 3. FARM MACHINERY VALUE RATIOS FOR SELECTED AREAS, 1940

Item	Value farm machinery per capita	Value farm machinery per crop acre	Value farm machinery per farm
Mississippi Delta <sup>1</sup>	\$ 47.55	\$ 7.68	\$211.00
Mississippi	28.97	5.80	138.00
Southern States <sup>2</sup>	28.92	5.65	163.00
Midwestern States <sup>3</sup>	179.81	11.05	795.00
United States <sup>4</sup>	129.66	10.12	614.00

Source: United States Census.

<sup>1</sup> Includes following counties: Bolivar, Coahoma, Humphreys, Issaquena, Le-flore, Quitman, Sharkey, Sunflower, Tunica, and Washington.

<sup>2</sup> Includes Alabama, Arkansas, Georgia, Louisiana, Mississippi, North Carolina, and South Carolina.

<sup>3</sup> Includes Indiana, Illinois, Iowa, Ohio, Wisconsin, and Kansas.

<sup>4</sup> Exclusive of 7 Southern states indicated above.

advantage of such efficiencies. They merely tend to aggravate the already rather acute underemployment problems.<sup>2</sup>

The successful harvesting of cotton with machinery will give added impetus to mechanization and improved practices for the total production process. Such an adjustment will certainly increase very significantly the per unit labor output on cotton farms, reduce unit cost, and should, at least in the short run, tend toward an increase in cotton farm labor income.

The only remaining serious bottleneck with reference to hand labor requirements will be that of chopping and weeding the cotton. Less progress has perhaps been made to date in eliminating hand labor in thinning the cotton to a stand and eliminating the grass, weeds, and vines that cultivators will not get than in any other phase of the production process. This is the next big problem in the way of complete mechanization. In experiments conducted at the Delta Branch Experiment Station, the flame cultivator has shown more promise as a possibility for filling this gap than anything yet tried.

### *Cotton Harvesting Machinery*

Despite the many attempts that have been made to develop a satisfactory mechanical cotton harvesting machine, most of the cotton produced today throughout the world is still harvested by the time-wasting, back-breaking methods used thousands of years ago when the Pharaohs reigned in the valley of the Nile. There has been no lack of persistent effort through the years to develop a mechanical cotton picking machine. The disappointing results of such persistent effort attest to the many difficulties associated with the problem. As early as 1850, S. S. Rembert and J. Prescott of Memphis, Tennessee, were issued a patent on a mechanical cotton picking machine. Since that time, hundreds of patents covering many kinds of mechanical cotton harvesting devices have been issued.<sup>3</sup>

Even though a very wide range of devices has been used experimentally in an effort to find a satisfactory cotton harvesting machine, most of the efforts can be grouped into five classes as

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<sup>2</sup> Welch, Frank J., *The Plantation Land Tenure System in Mississippi*, Mississippi Agricultural Experiment Station Bulletin Number 385, pp. 22-23, June, 1943.

<sup>3</sup> Smith, H. P., Killough, D. T., Byrom, M. H., Scoates, D., and Jones, D. L., *The Mechanical Harvesting of Cotton*, Texas Agricultural Experiment Station Bulletin Number 462, August, 1932.

follows: (1) picker type, designed to pick the cotton from the open bolls by means of spindles, fingers, or prongs, (2) thresher type, which severs the stalk and takes the entire plant into the machine where the cotton and vegetative matter are separated, (3) pneumatic type, which attempts to remove the cotton from the bolls either by suction or blasts of air, (4) the electric type, designed to attract the cotton fiber to a statically charged belt to remove the cotton from the boll, and (5) the stripper type, designed to remove the cotton bolls by combing the plant with teeth or by drawing it between stationary slots or revolving rolls.

Considerable progress has been made in the development of the picker type and stripper type machines during the past decade. The stripper machine is better adapted to the sub-humid regions of Texas and Oklahoma; the picker type machine is being used in the Mississippi Delta and other relatively level producing areas where the plant growth is relatively rank and the yield high.

Since the operational analysis for this report is for Mississippi, and since the stripper has been used only to a very limited extent and largely on an experimental basis in this State, only the picker type machine will be included in this report. Two general type pickers employing combinations of spindles and doffers have been developed. These two types are known as high-drum pickers and low-drum pickers. The former operate successfully in cotton growing up to 5 feet; whereas, the latter are used where the cotton stalk is  $2\frac{1}{2}$  feet or less in height. The low-drum machine is not adapted to Mississippi Delta conditions where the cotton plant usually grows rank.

No doubt, considerable progress will yet be made in improvement of the present cotton picking machines and the present retail price can probably be reduced when the machines are produced on assembly-line basis. Sufficient progress has been made to date, however, to demonstrate the feasibility of the mechanical harvester both from the operational and cost viewpoints, at least under current conditions of relatively high wages and scarce labor supplies.

#### *Mechanical Operation, 1944*

Detailed operational records were kept on the mechanical pickers that were used on a practical farm basis in 1944. There was a total of 12 of these machines. Records were also kept on the

operation of two additional experimental machines, which data were used largely as a check against actual field data.

In addition to machine operation records, information was collected on the effect of machine-picked cotton on grade and the amount of cotton left in the fields by the pickers. On all of the plantations using mechanical pickers, cotton was also picked by hand. The comparative grades and prices of machine-picked cotton and hand-picked cotton were compiled for each day of harvest throughout the season in such a way as to make daily comparisons from the same plantations as well as a seasonal comparison.

Figures were also compiled by actual boll count on one plantation and by estimates on all plantations on the amount of cotton left in the field by machines. The effect on income of grade reduction and loss of cotton in the field will be indicated later.

#### *Cost of Machine Operation, 1944*

A total of 2,229 bales of cotton was picked during the 1944 season by the 12 machines studied, or a seasonal average of 186 bales per machine. The number of days which a machine can operate during a season, the topography of cotton fields, length, of cotton rows, prevalence of weeds, and variety of cotton, are factors that influence the amount of cotton that can be picked in a day or during the season. A single machine will cover from 4 to 8 acres per day, which means, on the average for Delta conditions, from 4 to 10 bales of cotton per day can be harvested per machine.<sup>4</sup> During the 1944 season the 12 machines for which records are available operated an average of 430 hours, or 43 ten hour days. The machines actually picked an average of 4.3 bales for each ten-hour day they were in operation.<sup>5</sup>

The average cost, not including grade loss or value of cotton left in the field, for mechanically picking a bale of cotton in 1944 was \$7.38. This cost was divided as follows: direct operating cost, \$3.84; depreciation, and interest cost, \$3.54. See table 4 for detailed cost items.

<sup>4</sup> See Mechanization of Delta Cotton Plantation, by H. H. Hopson, Jr., Hopson Planting Company, Clarksdale, Mississippi.

<sup>5</sup> Detailed information as to the actual acres covered by the machines is available for only one plantation. This machine operated during a part or all of 49 days and averaged operating 9.8 hours per day, a part of which was at night. A total of 228 acres was covered and 202 bales were picked. An average of 4.1 bales of cotton was picked from 4.7 acres each day the picker operated.

Some of these cost figures should be regarded as tentative, especially those for maintenance and repairs. The manufacturers are still experimenting with the machine, consequently, some replacement parts and some repairs made by the Company were not included in the cost items. Only normal repair and upkeep charges, as nearly as these could be judged to be normal, were included in the cost items. Also, depreciation charges are rough

TABLE 4. COST OF OPERATING 12 COTTON PICKERS IN THE MISSISSIPPI DELTA DURING THE 1944 HARVESTING SEASON<sup>1</sup>

Item	Total cost	Average per picker	Average per bale for 2,229 bales
Direct operating costs:			
Fuel	\$ 1,096.79	\$ 91.40	\$ .492
Oil (motor and picker)	366.72	30.56	.165
Labor	3,801.13	316.76	1.705
Repairs (tractor and picker)	2,069.53	172.46	.928
Miscellaneous	1,230.69	102.56	.552
Total	\$ 8,564.86	\$ 713.74	\$3.842
Depreciation and interest:			
Depreciation (tractor)	750.00	62.50	.336
Depreciation (pickers)	6,417.89	534.82	2.879
Interest (tractors)	75.00	6.25	.034
Interest (pickers)	641.78	53.48	.288
Total	\$ 7,884.67	\$ 657.05	\$3.537
Total cost	\$16,449.53	\$1,370.79	\$7.38

Machine operators were paid an average of 38.5 cents per hour.

estimates due to lack of actual experience with reference to length of life of the machines. Pickers were depreciated at the rate of 20 percent per annum "straight line" and tractors at the same rate but for only one-fourth the time since tractors are normally used for other farm work the other three-fourths of the year.

Major adjustments for tractors are necessary when pickers are attached. The average cost for parts at the time of conversion was \$100, which amount was added to the cost of pickers. Installation labor cost was approximately \$50 and this was included with the miscellaneous items, which also included some other minor costs such as service costs for trailers used in servicing machines in the field and a few other very minor miscellaneous items.

The average cost of the pickers delivered to the plantations was



\$3,924, including \$1,250 for the tractors on which the pickers were mounted. Thus the average cost of the pickers including conversion kit was \$2,674. The interest rate on investment was calculated at 4 percent per annum on one-half the value of the pickers and one-half of the proportion of the tractor investment charged to the picking operation.

### *Grade Loss*

Despite the excellent progress that has been made and continues to be made, both with respect to the operation of the picker and for cleaning equipment on gins, cotton picked with mechanical harvesters is given a lower grade and thus sells in the market place at a discount over that of hand-picked cotton.

The machine-picked cotton averaged 1.4 grades lower than cotton picked by hand on the same plantation on the same days for the 1944 season. The average grade for 3,506 bales of hand-picked cotton was slightly above strict low middling; whereas, the average grade for 2,229 bales of machine-picked cotton was slightly below low middling, or a difference of 1.4 grades. The range of grade differences ran from 0.8 grade on one plantation to 2.2 grades on another plantation. There was a difference of 0.2 of one staple length in favor of machine-picked cotton, which may or may not be a significant difference in fiber length. The Delta Branch Experiment Station at Stoneville reports a comparable difference from unpublished data gathered in 1944.<sup>6</sup>

The average price for the grade of hand-picked cotton for the period September 1, 1944, through January 31, 1945, on the Memphis market was 21.73 cents per pound; whereas, the average price of the grade of machine-picked cotton in the same market during the same period of time was 18.05 cents per pound. The difference is equal to 3.68 cents per pound or an average of \$18.40 per bale in favor of the hand-picked cotton. See table 5.

### *Spinning Quality*

The Department of Agriculture, War Food Administration, Cotton and Fiber Branch, Stoneville, Mississippi, in preliminary tests have found that machine-picked cotton is slightly superior (stronger yarn) to that of hand-picked cotton. This was probably due to the fact that the shorter, weaker staple that constitutes the

<sup>6</sup> See also Mississippi Agricultural Experiment Station Service Sheet Number 364, P. W. Gull, July, 1943.

TABLE 5. COMPARISON OF GRADES AND STAPLE LENGTHS OF MACHINE AND HAND-PICKED COTTON, MISSISSIPPI DELTA, 1944

Item	Grade <sup>1</sup>	Staple length	Average price (cents)	Value per bale
Machine-picked	7.15	34.1	18.05	\$ 90.25
Hand-picked	5.75	33.9	21.73	108.65
Difference	1.4	.2	3.68	\$ 18.40

<sup>1</sup> This grade index was figured by assigning values of 1 to 9 to the grades of cotton in order from middling fair to good ordinary and then averaging these values for machine- and hand-picked cotton.

more undesirable cotton is left in the field under machine-picked conditions; and when the market comes to recognize this factor, the income loss as a result of excess grade penalty will be less than it is at the present time.

### *Defoliation*

Most of the machine-picked cotton had been defoliated by spraying the stalks with calcium cyanide dust. This cost was not added as an extra item for machine-picked cotton since much of the hand-picked cotton was also defoliated in the same way.

By thus ridding the stalks of leaves, the bolls are exposed to the sun rays which hasten the opening of the cotton and facilitate somewhat the harvesting of cotton by both hand and machine methods.

### *Variety Influence*

There is some indication that cotton variety may be important in terms of adaptation to mechanical harvest. Additional studies are now under way at the Delta Branch Experiment Station, Stoneville, Mississippi, and further evidence will be secured from actual field experience, but sufficient data are now lacking from which to draw any definite conclusions with reference to the importance of variety on machine harvest.

### *Cotton Gin Cleaning Equipment*

Considerable progress has been made in the development and installation of driers and cleaning equipment on modern cotton gins. Further progress is needed, however, as evidenced by loss of grades. Significant progress, however, appears to have been made during the past season. A newly designed cleaner called the "impact

cleaner" was installed late in the season, and the results obtained on late season, very trashy hand-picked, machine-picked, and snapped cotton were striking. Cotton that would have undoubtedly been classed as strict good ordinary was raised to strict low middling and some even to middling as a result of the use of this cleaner. There is also some question as to whether this cleaner will give the same results on early picked cotton as on late picked cotton.

The successful development of satisfactory cleaning equipment will eliminate the most significant single item of cost associated with the mechanical harvester. An approach to the solution of this problem is being made through breeding of varieties better adapted to mechanical harvesting, through establishment of cleaning equipment on pickers, and through development of better drying and cleaning equipment at the gins.

#### *Cotton Left in Field*

The amount of cotton left in the field as a result of machine operation over that which would have been left by hand-picking is a loss that needs to be considered along with the other cost items.

A detailed daily record on the basis of actual boll count was kept on one plantation throughout the season and the results showed that 91 percent of the cotton open at the time of harvest was picked by machine. Thus 9 percent of the cotton was left either on the stalks or on the ground. Estimates were made on other plantations, and it would appear, even though objective data were secured from only one plantation, that this percentage loss is about average for all the plantations studied. The losses were apparently higher in some instances and lower in others. Progress is being made in this respect through breeding and machine improvement. Some cotton will be left in the field even when hand-picked.

If we assume, therefore, that with hand labor approximately 2 percent of the cotton will be left, then there is a net loss of 7 percent of cotton due to machine operation. On the basis of current prices for hand-picked cotton and cottonseed and after allowing for the cost of picking, this is the equivalent of about \$7.62 per bale. However, from the standpoint of the producer, the loss of cotton is partly offset by the additional weight of machine-picked cotton which is due to foreign matter added in the picking process. Tests show that machine-harvested cotton has about 7 percent more foreign matter than hand-picked cotton. The cotton left in

the field, however, is an economic loss and should, therefore, be considered in any general comparison of the two methods of harvesting cotton.

### *Machine vs. Hand Picking Costs*

All items of operating cost and losses associated with machine-picked cotton considered, the actual direct cost of operating the picking machine is one of the smallest items involved. See table 6. Total costs and losses, including cost of picking, loss in grade, and loss of cotton left in field, was \$33.40 per bale in 1944.

TABLE 6. COMPARATIVE COST OF MACHINE- AND HAND-PICKED COTTON, MISSISSIPPI DELTA, 1944

	By machine	By hand
Cost of picking	\$ 7.38	\$37.76
Loss in grade	18.40	—
Loss of cotton	7.62	—
Total	\$33.40	\$37.76

The cost of hand-picking per bale (1600 pounds of seed cotton) averaged \$2.36 per hundred pounds or \$37.76 per bale on the plantations included in this study for 1944. Comparisons at different picking rates can be readily made by the reader. See table 6.

### *Favorable Factors in Shift to Mechanization*

Under conditions of stringent labor shortages, such as existed in 1944, there are certain advantages associated with machine operation that may not be reflected in comparative cost figures. The timeliness of harvest is an important factor, since the quality and grade of cotton usually deteriorate rather rapidly as the season advances due to weather conditions. The worry and uncertainty of getting the cotton picked under any conditions is also an important factor.

There are also certain other factors that are not reflected in the comparative cost figures in this report that are significant in terms of a shift to machine harvest. On the large plantations there is a heavy capital investment in living quarters and a recurring upkeep cost that is quite heavy. Moreover, seasonal labor is usually required even under the sharecropper system, the recruitment of which is bothersome and expensive under conditions of a relatively

adequate labor supply. Adoption of the mechanical picker would, as has already been suggested, make feasible more complete mechanization in the whole production process and would reduce or practically eliminate the cost of maintaining a large number of tenant houses and the bother and expense of labor recruitment and labor management problems.

The relative over-all cost of mechanical harvesting versus hand-picking will, of course, be the major factor in determining the rate and extent at which shifts are made to machine harvest. Such a shift, however, will involve a rather drastic reorganization of plantation operation. A careful over-all analysis, therefore, of operation under a system of machine operation compared with operation under the hand labor system will be required before all the cost factors can be considered for comparative purposes. Further studies will make such comparison possible.

#### *Retarding Factors in Shift to Mechanization*

Even though there is evidence that the key to complete mechanization of the cotton production industry is closer to reality today than ever before, any assumption that there will be a rapid and extensive shift to complete mechanization should be examined carefully. Had the mechanical picker been at the technological stage of development at the outbreak of the war that it is now, and had these machines been available during the war period, there can be little doubt that extensive utilization of mechanical harvesters would have resulted.

Distinct progress in mechanized cotton production will, no doubt, continue to be made in the postwar period, but the rate and extent of mechanization may be at a slower tempo than many people now anticipate. In the first place, agriculture continues to stand face to face with the problem of an increasing potential capacity to produce out of proportion to its capacity to gain outlets for its products. Secondly, some of the rural farm labor that will be displaced have had almost no experience with industrial discipline and complicated machinery, and some of them have had little experience in independent self-direction as a result of the paternalistic character of the plantation system.

These special handicaps, coupled with the distinct possibility that there will be an increase generally in the number of rural persons hemmed in by limited opportunities in both city and

country, may further retard the shift to complete mechanization. It should not be forgotten, furthermore, that less than a decade ago the leading newspapers in this area were advocating the junking of all mechanical cotton pickers in the Mississippi River as anti-social instruments and economically detrimental to the people within the area. Also the Agricultural Adjustment Administration was following a policy of restricting or attempting to restrict farm labor displacements. In case of rather widespread unemployment, it is quite probable that certain social and administrative restraints will again be used to discourage further farm labor displacement.

Finally, the shift to mechanical operation will all but destroy the old plantation system as it has existed since shortly after the Civil War. The large operating units under a single management will continue, but the existing paternalistic relationship between management and labor, the "furnish" system, the share cropper pattern of operation—in short, the very heart and soul of an economic and social institutional system that has become a distinctive symbol and traditional agrarian way of life in the Cotton Belt of the South, will have passed out of existence. Vested economic interest in the operation of phases of the old system, sentiment, and the heavy hand of inertia, will delay and hinder rapid shifts even assuming favorable economies associated with such shift.

### *Influence of Technological Advance on Producers*

The assumption that widespread shift to mechanical production of cotton will automatically solve the income problem of cotton producers seems to be rather widely accepted. Such assumption needs critical examination.

As a result of the existence of a large number of independent production units and intense competition, most of the gains in more efficient production in agriculture are, sooner or later, passed on to the consumer. Furthermore, the gains that do accrue to the producer are usually capitalized into increased land values. If improvements were adopted by producers simultaneously, consumers would undoubtedly get most of the benefits of increased efficiency quickly, but one of the most significant impacts of technological advance in agriculture, however, is that farmers do not and cannot apply at equal rates the results of science and invention. New and old techniques continue side by side—the

one-horse plow and the tractor operate in adjacent fields; one-horse wagons and modern trucks transport cotton to the same market; and very likely, the power harvester and the laborer armed only with his bare hands and a sack across his back will both continue to harvest the American cotton crop for some time to come.

The areas that will receive the greatest direct benefit from economies growing out of mechanization will be those areas in a position to first take advantage of the opportunity. There is still another benefit that will flow from production efficiency at this particular time. And this benefit needs special emphasis. The current and prospective competitive position of American cotton is the most hazardous and precarious in its long history. Lower production costs reflected in lower selling price will strengthen the competitive position of cotton and result in a larger volume of consumption in both the domestic and foreign markets.

#### *Social and Economic Effect of Mechanization*

*Plantation areas.* A shift to mechanization of the cotton harvest will have its effects on both the cotton plantation and the "family size" farm unit, but the repercussions will be of a different nature. Mechanization will, of course, come first in the plantation areas, which will in turn tend to force changes in farm organization and operation in the non-plantation areas. Despite certain gains that may accrue to certain producers and despite the longtime gains to society in more efficient production and the improved competitive position of cotton, the immediate resultant economic and social dislocations and changes may be painful for both type areas unless "off farm" employment is available. If so, the displaced laborers as well as those who remain on the farm will be benefited.

Complete mechanization of cotton production in the plantation areas is not expected in the near future. But assuming relatively complete mechanization of the cotton harvest together with fuller mechanization of other production processes, this will mean a significant displacement of labor in the cotton plantation areas. Even though the population density within the plantation areas is little, if any, higher than that for the non-plantation areas of the Southeast, cotton not only plays a much more important part in the economy of the plantation areas than it does in other areas, but the plantation is much better adapted to more complete mechanization.

Under relatively complete mechanization, it is difficult to forecast the probable displacement numbers, but such displacement obviously will be high. The labor required to produce an acre of cotton using a mechanical picker is only 37 percent of the labor required to produce an acre of cotton using hand labor for harvesting, the equivalent of a 63 percent reduction in total man-hour requirements. This percentage change assumes the usage of multiple row planters and cultivators, but even with multiple row equipment, already in use, there is little doubt that still further reductions will be made in man-hour requirements in planting and cultivating when mechanical pickers can be introduced. Thus a conservative estimate of labor displacement runs from 55 to 65 percent.

A few plantations are already operating on a ratio of about one family for each 100 acres of cropland by utilizing seasonal labor for chopping and picking. In 1940 there was one family for each 27 acres of cropland in the Delta area. On the assumption that widespread adoption of the picker would make possible adjustment of the labor force to 100 acres of cropland for each family instead of 27 acres per family as in 1940, then 73 percent of the present families would not be needed.

In 1940 there were 64,683 farm families, or a total farm population of 287,111, in the 10 all-Delta counties. A 73 percent reduction would mean that the 10 all-Delta counties alone would lose 47,218 families and 209,591 in rural farm population. But, as a matter of fact, the area has probably already lost from 30 to 35 percent to the Selective Service and to war industries since 1940. If postwar conditions are such that only a few agricultural workers return to the area, then obviously the effect of mechanization will be correspondingly less severe.

*Non-plantation areas.* Relatively complete mechanization of the cotton harvest and in turn cotton production will have its effect on the non-plantation areas of the Cotton Belt even though the adjustments will be somewhat of a different nature. The ratio of farm population to cropland indicates a relative dependence on intensive crop production equal to that in the plantation areas.

The non-plantation areas of the Southern cotton states are characterized by small operating units. Despite the fact that most of these units have only a small acreage of cotton, cotton and cottonseed products constitute the major cash income crop, and in fact, there is no alternative crop outside the concentrated



tobacco, peanut, and a few high specialty crop areas that will provide acreage or labor returns anywhere nearly equal to that of cotton.

Many of these farms are too small to shift to mechanized operation; the topography of many others hinders or precludes shift to mechanized operation; many of them, equipped as they are now with little farm machinery and equipment, provide, under these conditions, even less than full employment the year round; and finally, the landscape is characterized by extensive erosion and poor management practices. The availability, therefore, of effective cotton picking machines and other mechanized equipment provides only limited opportunities for improved practices and increased income in the absence of drastic reorganization and enlargement of operating units.

The contention that these small "upland" operators can take advantage of mechanized operation either through cooperative purchase or custom service overlooks the fact that such an arrangement guarantees neither increased production nor cheaper production. As a matter of fact, if mechanized operation merely displaces hand labor without providing alternative employment opportunities, cash costs may move up without corresponding increase in income. With income already normally near the subsistence level, any such adjustment might be intolerable. In other words, any labor income on these small units is just that much additional income. The cotton picker would cut down sharply on practically the only source of employment for women and children on these small farms, which is desirable from both a social and economic viewpoint, provided of course some other means of maintaining or improving the present income can be found.

With the coming of mechanized cotton production and its concomitant economies in the areas adapted to mechanized operation, the areas of small cotton farm operation, under the impact of assumed lower cotton prices, may be forced to shift more to livestock and other crops. Such an adjustment will mean a more extensive type of agriculture, which in turn means that operating units will have to be enlarged and more machinery, equipment, buildings, and other operating facilities provided. This will involve a very considerable reduction in farm population within these areas, change in ownership patterns, additional credit, and significant adjustments in the whole range of service institutions. There

is no reason to believe that the adjustments will be any less painful or disturbing than those taking place in the plantation areas.

### *General Summary and Conclusions*

There is evidence that the key to the successful mechanical harvesting of cotton and in turn the complete mechanization of cotton production, is closer to reality today than ever before. Actual farm experience with a sufficient number of machines during the past two or three seasons in the Yazoo-Mississippi Delta has demonstrated the technical and economic feasibility of harvesting cotton with machinery. With the advent of a successful cotton picking machine, the only serious bottleneck to complete mechanization of cotton production will be that of properly thinning and weeding the cotton.

The average cost per bale of machine harvest of 2,229 bales of cotton by 12 machines during the 1944 season was as follows: direct operating cost, \$3.84; depreciation and interest cost, \$3.54; grade loss as a result of mechanical harvest, \$18.40; value of cotton left in field that would have been picked by hand labor, \$7.62; total, \$33.40.

On the plantations using mechanical pickers the cost of hand-picking a bale of cotton at the prevailing rate of \$2.36 per hundred was \$37.76 on the basis of 1600 pound seed cotton per bale.

The rate and extent of shift to mechanical harvest in the immediate future will depend upon a number of unpredictable influences such as: supply and cost of hand labor; alternative employment opportunities for displaced farm labor; realization of anticipated progress in technical improvement of picking machine, of cleaning devices at the gin, and in the breeding of varieties better adapted to mechanical harvest; and finally, the discovery of ways and means of utilizing machines for harvesting cotton in the rolling upland, small farms, small field areas of the southeast.

The assumption that widespread shift to mechanical production of cotton will automatically solve the income and market outlet problems of cotton producers merits critical appraisal. Past experience has demonstrated that production efficiency gains are, for the most part, sooner or later passed on to consumers, or that whatever gains that do accrue to producers are capitalized into increased land values. Society would, however, gain as a result of

any efficiencies associated with shift to mechanization and the competitive position of cotton as well as the cotton producer would be distinctly improved.

A shift to mechanization of the cotton harvest will leave its impact on both the cotton plantation and the "family size" farm unit. Relatively complete shift to mechanized operation will mean a heavy displacement of labor in both types of areas. The traditional plantation system as such will undergo significant changes. The whole institutional arrangement within the plantation areas will be subject to drastic change and the farm population may shrink some 55 to 65 percent.

In the small or "family size" farm areas of the Cotton Belt where the pressure of farm population against land resources is equal to or greater than in the plantation areas, adjustments looking towards a more extensive agriculture and a displacement of farm population only slightly less than in the plantation areas may take place. Such adjustments would mean the enlargement of operating units with more machinery, equipment, buildings, and other operating facilities and a greater amount of capital investment. In the absence of other employment opportunities either on the farms with some other intensive enterprise or combination of enterprises or off the farms within the areas, the whole range of institutional service patterns may undergo significant change within these areas.

American cotton production must be made more efficient if it is to compete successfully in the market place with foreign grown cotton and synthetic and substitute products and at the same time bring the producer anything like an adequate income. The economic and social dislocations and adjustments as well as the ultimate benefits that rather complete mechanization of cotton production and harvesting will inevitably bring, must be shared by society as a whole.

## A CRITICAL EXAMINATION OF MARKETING RESEARCH

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THE Bureau of Agricultural Economics recently had occasion to draw upon secondary sources for data on marketing costs and margins. For this purpose it briefly abstracted and card-indexed 589 bulletins and other reports of agricultural marketing research, after examining several thousands, most of which had no bearing on the subject. Although these reports do not represent complete coverage of the marketing research publications of agricultural experiment stations and Federal government agencies, they do constitute a very large sample which furnishes some useful illustrations, at least, for discussing the present subject. Researchers of other Federal or State agencies may have access to these cards.

Sorting these reports on the basis of certain factors significant in evaluating the character and effectiveness of marketing research yields some interesting comparisons. (See table I.)

Marketing research consists essentially of a critical analysis of the existing marketing system, leading to suggestions for improvement. It is hoped that benefits will result from this constructive criticism of existing marketing institutions and methods. Marketing researchers, likewise, should benefit from occasional frank examination and suggestive criticism of their own efforts.

The following evaluation is offered in this spirit. If the appraisal is not too complimentary, readers are asked to bear in mind that the author of these remarks has himself engaged in marketing research for many years, and is willing to bear his share of the responsibility for any inadequacies disclosed by this examination.

### *Descriptive vs. Problem Approach*

Much of the marketing research which has been done to date has been almost purely descriptive in nature. Of these 589 published marketing research reports, 82 percent are of this character, and only 18 percent deal with problems and their solutions. Many of these descriptions merely particularize the obvious. Frequently

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<sup>1</sup> The research reports referred to herein were indexed and classified by C. C. Curtiss, also of the Bureau.

we have been inclined to outline a project of "broad scope," collect a lot of miscellaneous facts about the marketing of a commodity or the operations of a given type of marketing agency, arrange these data in tables, charts and maps, and then prepare a textual description of the figures. We disclose to the expectant reader that there are so many cream stations in the area studied, doing an average annual volume of business of so many dollars and pounds, that such-and-such a percentage of the butterfat marketed in a given State is sold through cream stations, and that these stations ship their cream to so many creameries. Of course, anyone acquainted with the industry already knew approximately the conditions specified, but they seem pleased to have the specific figures down to 2 decimal points, and not too many skeptics stop to ask, "So what?" We hope it is not because the people who might be expected to benefit from marketing research do not read such bulletins.

This type of descriptive research has been useful as a basis for teaching courses in marketing, and has furnished a profusion of material which has given a partial answer to the oft-quoted question, "What goes on in the dark?" It has been useful, although by no means fully adequate, in training personnel for research and extension work in marketing. The spreading of this general information has helped to bottle up some of the more common misconceptions about marketing, and thereby helped to avoid the kinds of mistakes which were so frequently made in past years in setting up cooperative marketing enterprises and in proposed legislation dealing with marketing and transportation. To a rather limited extent it has served as the basis for improvement in marketing services, such as grading and standardizing.

In general, however, these are not ends in themselves, but means to an end, which is the improvement of marketing efficiency. This improvement might take the form of a reduction in the cost of rendering given marketing services, or an increase in the utility of service being rendered at a given cost, or both. If one well acquainted with the field of marketing research were to be asked suddenly, "Just what specific improvements in marketing have resulted from all of this research?" he might be surprised at his difficulty in furnishing a satisfactory answer. It would be much easier to cite illustrations of marketing research which has shown what cannot be done to improve marketing. Pricking the balloons

of uninformed marketing evangelists has been a very useful contribution of marketing researchers, since it has prevented waste of money and effort in trying to accomplish the impossible. But something more constructive also is needed.

Does the fact that much of the marketing research has served merely to describe and justify present agencies and methods indicate that there is really no room for substantial improvement? A good many people, unfortunately, are coming to feel that the answer to this question is "yes." More and more, economists not directly engaged in marketing research seem to have come around to the view that no material reduction in the spread between the producer and the consumer is possible with or without marketing research, and that any improvements in the utility of marketing services which are likely to result from marketing research are of minor consequence compared with the solution of such problems as stabilization of the price level, enhancement of consumer incomes, supporting prices through Government programs, and readjustments in the utilization of agricultural resources. This viewpoint is widely reflected in such current materials as the preliminary report on Postwar Agricultural Policy of the Committee of the Land Grant Colleges.

In the century preceding the great depression people placed major, if generally unmerited, blame for unsatisfactory prices and farm incomes upon the marketing system and transportation agencies. The pendulum now has swung to the other extreme, and most of our present-day economic planners hardly give lip service to marketing devices as a means of improving agricultural conditions or of getting cheaper food to the masses of low-income consumers. About the only place where marketing seems still to find large favor as a factor in agricultural policy is in the committee rooms of Congress and the deliberations of our farm organizations.

These negative attitudes seem to be based to a considerable extent upon what is perhaps a fact: after 40 years of marketing research we know a great deal about how products are marketed, the nature of the operations of agencies through which commodities move, and the reasons why marketing costs are incurred, but we still have not shown how to make substantial improvements in marketing. The research bulletin which contains a suggestion promising to effect a material reduction in marketing costs or a really worth while increase in the usefulness of marketing services

is a rarity. The "conclusions and recommendations" found at the end of some bulletins frequently are but common-sense observations which could have been made just as well before the "study" was begun. This paucity of constructive results is in spite of the fact that hundreds of trained research economists and statisticians have been employed and millions of dollars have been spent in marketing research.

There have been some major improvements in marketing during the 40 years in which formal research in the marketing of farm products has been conducted. Unfortunately for the record, these appear to the author to be attributable more to the individual initiative of private business and of State and Federal service personnel than to the results of professional economic research. One of the most important improvements, from the standpoint of increasing efficiency and reducing the costs of marketing, has been the development of the self-service super-market and modern type of retail chain food store. This development perhaps has done more to get cheaper food to low-income consumers than all of the excellent Government programs for this purpose combined; yet, the day before the first of these stores was opened many marketing researchers probably would have been as certain as they seem to be now that retail food distribution costs could not be substantially reduced. Any study of retail food-store operating costs and practices made at that time probably would have found ample justification for the costs then encountered, and only negligible savings possible from minor reorganization of operations. The imagination to visualize new ways of doing things has been associated too rarely with marketing research.

A second major improvement in marketing has been the development of new and more efficient processing methods for dairy products, poultry and eggs, meats, fruits and vegetables, and other commodities. Researchers in the physical sciences seem to have contributed much more to these developments than have those who are concerned with the economic phases of marketing research. In fact, we may be justified in saying that relatively few market researchers even now seem to be much aware of the revolutionary implications of the freezing preservation of foods, drying of milk, consumer packaging of meats and other technological advances which are now with us or in the immediate offing. The physical aspects of these technological features of marketing can be best

left to the chemist, plant pathologist and others; but the economic aspects are equally important, and marketing research can make tremendous contributions by awakening to the possibilities and problems involved.

Another outstanding advance in marketing during the past 40 years has been the development of grading and standardization and market news services. Even here the record is far from being complimentary to marketing researchers. The programs arose, not out of research, but chiefly from the efforts of "practical" people drawn from the trade or marketing service work. This is not said in criticism, since market researchers had little to offer in setting up the programs. Countless opportunities to contribute toward improvement of grades and standards and market price quotations have passed up by those engaged in marketing research. Many, possibly most, of the grades now in use are little more than modifications of trade terms and customs, little attention having been paid to the determination of actual consumer preferences and their relation to quality standards throughout the marketing system. A prize example of this is our system of butter scoring. Critics of enforced consumer grade labeling have a point in that many of the existing grades bear relatively little relation to those quality considerations which most influence consumers in their buying. We have made hardly a beginning in improving the whole system of grading and standardization through acutely pointed research.

Market news is in just as much need of research designed to discover the kinds of quotations most needed by farmers and agricultural businessmen, and especially to improve the representativeness of the quotations. The inadequacies of many currently available market price quotations are nothing short of appalling when they are examined under an even mildly critical microscope, despite the progress which has been made in recent years in extending the scope of the Government's market news service. Relatively few wholesale price quotations are sufficiently specific and representative for anything except to give a day-to-day general picture of price trends. Quotations too frequently are given in terms of a wide range, and there are indications that the grades supposed to be represented frequently vary from market to market according to differences in the reporters' judgment. Many of the wholesale quotations for various reasons are believed to be un-



trustworthy for use as an average price, representing, for example, price bases on which premiums and discounts are regularly allowed in connection with actual sales. Here, as in grading and standardizing, we are very much in need of marketing research addressed to the specific problems involved and which will do more than merely point up the value to farmers of quality standards and price quotations.

Still another marketing field in which some people, at least, will claim progress has been made in recent years is in the "control" of market prices through Government programs of various kinds, such as marketing agreements, diversion programs, storage operations and the like. Inevitably some mistakes have been made in developing and applying them, and the voices of those few marketing researchers who have had important constructive comments to make may not always have been heard by those formulating the programs. Yet, again, it may be suspected that the paucity of real research bearing on these operations and problems has been one reason why the marketing economists have not had more influence on them. One can count almost on the fingers of one hand the marketing researchers who have dealt vigorously and effectively with these problems in their analyses.

Perhaps these criticisms of the effectiveness of marketing research in obtaining important improvements in marketing represent too severe a condemnation, and overlook many individually minor but collectively worthwhile contributions. It has been said that not all of the best research gets to be published in bulletins. There have been some outstandingly excellent contributions, but they represent exceptions to the rule which is the theme of this paper, and which presents a striking challenge to marketing researchers.

The time has come to abandon stodgy descriptions and particularizations of the obvious, and take a step forward by dealing in a realistic way with the many important marketing problems to which answers must be obtained through research before definite improvement in marketing efficiency and reduction in marketing costs can be obtained. This implies the need for a critical re-examination of the methods employed in marketing research. It also emphasizes the need for more imaginative, original thinking by researchers who expect to be judged by the good they accomplish rather than by their number of bulletin pages or tables of data.

A first step in putting marketing research on a more useful plane would be to adopt as far as possible the methods which have been applied so successfully for so many years in the physical sciences. Briefly, this methodology is: first, to inventory problems likely to be encountered; second, to formulate hypotheses regarding possible solutions; and third, to subject these hypotheses to objective verification by controlled experimentation. Although some purely descriptive research still is carried on in the physical sciences, much of even the so-called "pure" research is conducted on this basis. The only necessary difference between the physical sciences and marketing in this regard is that marketing uses statistical controls whereas the physical sciences use laboratory controls. And even here the difference is less than might be supposed, since the results of even laboratory experiments must be checked for statistical significance in the same way as are the results of statistical experimentation. Every experiment is a problem in sampling.

No collection of miscellaneous facts or organization of descriptions will substitute for the placing of primary emphasis on problems, the exercise of real imagination in formulating hypothetical solutions, and the use of rigorous statistical procedures in verifying our *a priori* conclusions. The mere enumerator will never make important contributions to marketing research. He will simply wind up with a lot of facts and no idea of what to do with them.

This basic conflict in methodology may be illustrated by a hypothetical research project dealing with refrigerator cars. Under the too frequently encountered methods of doing marketing research the procedure would be to outline a project, and eventually write a report, consisting of the following sections: (1) a history of the development of refrigerator cars, including data on the number in use in different years and changes in size or capacity and other factors; (2) principal uses made of refrigerator cars, including data on the quantities of various commodities transported by refrigerated freight and express, and perhaps points of origin and destination of refrigerator car shipments; (3) a description of how refrigerator cars are loaded and unloaded, and of various marketing features found in connection with them, such as shipping point inspection certificates; (4) a summary and conclusions, the latter being that refrigerator cars occupy an important place in the transportation of agricultural perishables, and that no other mode of transportation is likely to replace them entirely.

In reaching this end result the researcher proceeds to get out

a questionnaire to fruit and vegetable shippers, cooperative associations, and other users of refrigerator cars in which he asks for: (1) name and address of organization, (2) annual volume of business, (3) products marketed, (4) number of freight refrigerator cars loaded in previous years, (5) number of express refrigerator cars loaded, (6) destination of refrigerator cars loaded, (7) railroads over which refrigerator cars moved, (8) number of re-icing points, (10) number of crates loaded per car, (11) amount of money paid for freight and express charges, (12) number of cars arriving in good and bad condition. When the questionnaires are in, the data are tabulated, with due precautions to insure correct rounding of third decimals, and a number of tables are prepared. This information will no doubt constitute a mental stimulus to some sophomore student burning midnight oil over his assignment for marketing class in the Alpha Gamma Rho house some years later, but is hardly calculated to result in better refrigerator cars.

If he follows the problem approach, the researcher may first talk with a number of people who use refrigerator cars or are connected with their operation, getting their views about what is wrong with refrigerator cars and how these defects might be remedied. He studies the literature. He sits in a quiet place doing some quiet thinking. He builds in his mind his dream refrigerator car, with many new features, using new materials such as light-weight metals, and with artificial electrical or chemical refrigeration. This car is a monstrosity. He then takes each feature of the car apart mentally, by obtaining facts and reasons bearing on its practicability. One by one, some of the features are eliminated and others are expanded. Eventually the monstrosity becomes a reasonable facsimile of an improved refrigerator car, but it is still on paper. The next step, so far very seldom used by marketing researchers, is to persuade somebody to build the new refrigerator car and try it out in actual operation, to discover its hidden defects and the further improvements needed.

These are the methods used by those who have accomplished so much in improving the efficiency of industrial production. They are the methods used by those who seem to have accomplished most in improving the marketing of farm products. They are the methods of the research department of the chain store, of the large processors of farm products, of the manufacturer of new packaging materials used to contain food products. There is no good reason why

the economic scientist concerned with marketing cannot use the same effective principle of methodology.

It would not be effective, of course, to attempt to make half-baked chemists, engineers, or CPA's out of marketing economists. Nor do we wish to make the mistakes of a few physical scientists who have fondly imagined they were economists as well, and dabbled with unfortunate results in the economic phases of marketing research. But most important marketing problems, such as the refrigerator car problem, have many elements in addition to the economic. Someone must integrate these interests, and this seems to be a job which the marketing economist can do as well as anyone. All such tasks, in any event, call for genuine ocooperation among the physical and economic scientists working as a team. The marketing economist should know enough about the technological phases of the problem to be able to tie together the several elements of the problem. Frequently, he will have to obtain this knowledge by contacts with physical scientists after he starts work on a particular project.

The last step in conducting research along these lines—actual trials of new methods or equipment in commercial operations—requires funds and the cooperation of people engaged in business. This financial and moral support will be forthcoming when marketing researchers show that they have practical, constructive ideas to offer.

This is not intended to imply, of course, that some description and use of statistics is not appropriate in marketing research. On the contrary, there are many phases of the work which require such an approach. But we should place emphasis in our research on problems, and any type of proposed research project which is purely or largely descriptive in nature should be automatically flagged down for careful examination before time and money are spent on it.

#### *Geographical Boundaries of Marketing Research*

Another weakness of past marketing research has been the large amount of duplication involved in conducting projects on a State basis, and the accompanying failure to deal adequately with many marketing problems which are broader in geographical scope than State boundaries.

An example of this is research conducted during the twenties on

the operation of livestock shipping associations. Nearly every State in the livestock-producing region eventually had a research project of this kind, issuing bulletins containing dot maps showing the location of livestock shipping associations and tables giving their average volume of business and discussing appropriate methods of operation and bookkeeping. Much of the really useful material in any one of these bulletins would have been equally applicable in the other livestock States, and the purely enumerative aspects, although interesting, were of little or no practical importance. It may be suspected that an author of one of these efforts, wanting to avoid "copying" and to be original, sometimes omitted worthwhile analyses which had appeared in some previously published bulletin of the same type, thus limiting the usefulness of his own report.

The States involved could have greatly increased the effectiveness of this research by combining their efforts to get out one report covering the subject thoroughly, with individual researchers taking responsibility for those portions of the subject which they were in the best position to handle. In this way, duplication of effort could have been avoided and the informational material available to patrons, directors and managers of shipping associations would have been superior in most cases to that which was furnished on a State basis.

Many other examples of this kind of duplication and relatively ineffective effort will occur to anyone acquainted with the history of marketing research. Research in the operations of cream stations and centralized creamery procurement, local trucking and market milk assembly and distribution are cases in point. The work of the New England Research Council on Marketing and Food Supply furnishes a good example of what can be done to avoid such inefficient use of research facilities, and of the consequent increase in the dividends obtained from marketing research expenditures. In connection with some problems the improvement which would result from a greater degree of cooperative effort among researchers would not be so much in the avoidance of duplication as in more complete coverage of problems which cut across State lines. An example of this is the subject of market price differentials for livestock which is now being dealt with by the Corn-Belt Livestock Marketing Research Committee. If marketing research in general

were coordinated or integrated on the basis of geographical boundaries associated with specific problems, such excellent examples of cooperative research efforts would not be so nearly unique, but would be commonplace.

There has been an increasing recognition of the fact that many or most marketing problems are broader than State boundaries, as indicated by the encouragingly large proportion of the reports covered by table 1 which deal with subjects of regional or national scope (49 percent combined). But we still have much to do in effecting better working relations among marketing researchers in dealing with such problems. This will be particularly true as the multiplication of research projects gradually exhausts the subjects of more local significance and the work progresses into those phases of marketing beyond the primary markets for farm products.

### *Long-time Projects Emphasized*

Most (88 percent) of the projects reported in those 589 publications were not addressed to current problems immediately demanding attention (such as what to do with egg-drying plants after the war), but were of a long-time or continuing nature. This has certain advantages in extending the useful life of the results of research, but may indicate some lack of flexibility in planning and executing marketing research programs. The outbreak of war forced those engaged in many other lines of professional work, including industrial research, to set aside peacetime preoccupations and devote themselves to finding solutions to war problems. It would appear that marketing researchers have had more difficulty in reorienting themselves, and many important wartime decisions have had to be made without benefit of research results which could have helped a great deal.<sup>2</sup>

How to administer marketing research programs so as to preserve the benefits of continuity of effort and to give due recognition to the subject-matter interests of individual researchers, and at the same time to anticipate and help meet urgent marketing problems that arise with changes in economic conditions, is a very difficult question to answer. Perhaps, at least, more attention should be given to the problem.

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<sup>2</sup> Thomsen, F. L., *The Impact of War on Marketing Farm Products*, THIS JOURNAL, February 1943, pp. 140-142.

TABLE 1. CHARACTERISTICS OF 589 MARKETING RESEARCH REPORTS WHICH HAVE BEEN ABSTRACTED AND CARD-INDEXED FOR USE OF MARKETING RESEARCHERS, BY THE BUREAU OF AGRICULTURAL ECONOMICS

	<i>Number</i>	<i>Percent</i>
1. Marketing system coverage		
a. To first processor. . . . .	170	29
b. Processing. . . . .	122	21
c. Distribution. . . . .	194	33
d. All. . . . .	103	17
Total. . . . .	589	100
2. Type		
a. Descriptive. . . . .	481	82
b. Problem. . . . .	108	18
Total	589	100
3. Timing		
a. Immediate. . . . .	71	12
b. Continuing. . . . .	518	88
Total	589	100
4. Commodity groups		
a. Livestock. . . . .	71	12
b. Dairy. . . . .	139	24
c. Poultry and eggs. . . . .	19	3
d. Grains. . . . .	53	9
e. Cotton. . . . .	30	5
f. Tobacco. . . . .	8	1
g. Fruits and vegetables. . . . .	174	30
h. Wool. . . . .	7	1
i. Cut-across. . . . .	69	12
j. All other. . . . .	19	3
Total. . . . .	589	100
5. Geographical		
a. State. . . . .	207	35
b. Regional. . . . .	72	12
c. National. . . . .	217	37
d. City or county. . . . .	93	16
Total. . . . .	589	100
6. Marketing or transportation		
a. Marketing. . . . .	349	59
b. Transportation. . . . .	133	23
c. Cut-across. . . . .	107	18
Total. . . . .	589	100
7. Functional		
a. Assembling. . . . .	130	22
b. Grading and standardization. . . . .	8	1
c. Financing. . . . .	3	0
d. Storing. . . . .	21	4
e. Processing. . . . .	80	14
f. Transportation. . . . .	66	11
g. Dispersion. . . . .	164	28
h. Cut-across. . . . .	117	20
Total. . . . .	589	100

*Commodities Covered*

The organization of agricultural marketing research has resulted in a coverage of commodities (see table 1) which seems to reflect the agricultural interests of the States which have engaged most actively in marketing research, as much or more than the relative importance of the products or the number and acuteness of the problems involved. Only 3 percent of the studies, for example, dealt primarily with poultry and eggs, although the marketing of these products perhaps involves as many problems and opportunities for improvement as any, and they represent at least minor farm enterprises in all States. Prolificacy of the Northeastern States' researchers is discernible in the high percentage (one-fourth) of the reports concerned with dairy products, as is also the fact that market milk distribution has seemed to offer a relatively simple research project which could be tackled without too much trepidation by beginners in the field. The author of these remarks well remembers reporting for his first job of marketing research and being assigned a market milk project for this reason.

Fruits and vegetables get the biggest play of all the commodities, which is perhaps natural in view of the large number of separate products in this group and the general dissatisfaction of producers with widely fluctuating prices and large marketing margins associated with such perishable and seasonal commodities. It seems probable, also, that one reason for the popularity of this group among researchers is the fact, referred to later, that many economists in the field have considered the scope of their research limited mainly to problems of assembly and first sale, which are relatively more important in the fruit and vegetable field than for some other commodities such as livestock and grains.

It is notable, also, that only 12 percent of these reports cut across commodity lines, which indicates concentration of researchers on descriptive studies of commodity marketing rather than on functional analyses.

*Concentration of Attention on Assembly and Primary Markets*

Perhaps the most important weakness of all in past marketing research has been the concentration of attention of researchers on those steps in the marketing system between the farmer and the first processor or primary market. This portion of the marketing system absorbs a very small proportion of the consumer's dollar, and even if research in this field were of maximum effectiveness,



relatively little could be done through it to improve the over-all efficiency of marketing. For example, recent research of the Bureau of Agricultural Economics shows that those processes connected with ginning and merchandising the raw cotton take less than 3 percent of the consumer's dollar paid for cotton goods. Most of the consumer's dollar is absorbed by manufacturing, wholesaling and retailing. Retailing alone takes a much larger share of the consumer's dollar than the combined operations of ginning and merchandising the raw cotton, spinning the yarn and weaving the cloth, and dyeing and finishing the cloth.

If substantial progress is to be made in reducing the costs of marketing, major attention must be given to those segments of the marketing system which absorb the larger part of the total costs. Moreover, it is in those portions of the marketing system that are beyond the sale of the raw product in which occur other marketing phenomena having the most important relation to prices received by farmers, the development of new market outlets, and the promotion of wider distribution.

Despite these rather obvious facts, relatively little attention of marketing researchers has been given to those portions of the marketing system beyond the first processor. This point tends to be covered up by the figures given in table 1, which indicate that about three-fourths of the 589 reports deal with phases of marketing beyond the first processor. An important reason for this apparently favorable showing is the large amount of attention which has been given to market milk distribution, clear through to the final consumer, and to fruit and vegetable marketing. The selection of bulletins to be indexed, based on their contribution to our knowledge of marketing costs, also biases this proportion. For most commodities, such as livestock, cotton, grains and tobacco, nearly all of the marketing research has been concerned with the assembly phases of marketing rather than processing and distribution. This also is indicated by the fact that 23 percent of the reports that are summarized in the table dealt with transportation, reflecting the large amount of work done on local trucking from farm to primary market.

One reason for this condition is that the term "marketing" has been too narrowly interpreted by some, including a few administrators of research funds, as referring only to operations connected with the raw agricultural product. Another reason for this situation

is the fact that marketing researchers usually have been trained in subject matter connected with the handling of primary products at the farm end of the marketing system, and frequently have been hesitant to deal with the more complicated and technical phases of marketing beyond the first processor. Still another factor is the prohibition against use of State funds for travel beyond State boundaries, which in itself is enough to effectively limit participation in research projects covering the more important portions of the marketing system. And finally, the close contact of marketing researchers with agricultural organizations and farmers, and the natural interest of the latter in marketing phenomena close to the farm, has led to the encouragement of work at that level.

The way to rectify this serious defect of marketing research is to first obtain understanding on the part of experiment station directors, farm leaders and legislators that the farmer is just as much concerned with what happens to his products after they leave the county or area boundaries as he is in the marketing processes near the farm. The next step is for marketing researchers to prepare themselves to do work in these other fields by a process of self-education, including both the giving and taking of courses which deal with the more advanced phases of marketing including some technology. A dairy marketing researcher, for example, might reasonably be expected to know something about the technology of milk drying. The third step would be to raise our sights in planning research projects by thinking in terms of the whole range of marketing operations from the farmer to the consumer.

Following such a policy, for example, we may want to think of transportation not merely in terms of local trucking or railroad loading facilities, but in connection with such problems as the development of new types of railroad car equipment, the use of air transport, speeding up transportation service in the handling of perishables, short-circuiting terminal market bottlenecks by the use of portable refrigerated equipment permitting less-than-carload shipments of perishables to surrounding smaller cities and towns, and questions relating to the freight rate structure. We would give attention to such things as legal and tax discriminations against chain stores and trucking systems, legal prohibitions against food manufacturers engaging in distribution to the final consumer, the desirability of so-called "fair trade" laws affecting price flexibility, labor practices in marketing and transportation which affect mar-

keting efficiency and costs, and similar matters which have seemed far removed from the type of marketing research centering upon the assembly end of the marketing system.

*New Horizons for Agricultural Marketing Research*

The indifferent or unfavorable attitude of many people toward marketing research, which has been previously referred to, reflects what seems to this writer a rather general feeling that marketing research no longer is young and vigorous; that it is merely going through routine motions which have been described many times before, like a group of persons indulging in calisthenics. This appraisal may not be correct. But it is certainly true that marketing research has hardly touched upon the wide field of usefulness open to it. Studies directed at important problems, conducted with up-to-date methodology, and with maximum attention to cooperative effort among researchers and between public and private agencies affected, should yield results of value far beyond their cost. The abandonment of outworn tradition and the vigorous adoption of improved methodology can lead the way to new areas of activity of tremendously increased usefulness to farmers, agricultural businessmen, and the general public.

## ANALYZING LABOR REQUIREMENTS FOR CALIFORNIA'S MAJOR SEASONAL CROP OPERATIONS

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COMMON usage calls for superlatives in describing the phenomena of California. So it was that California's wartime farm labor crisis was *greatest* and *worst*. Any farm labor shortage is a threat to the nation's supply of food, feed, and fiber. In California the significance of a shortage is only more acute because of the high proportion of the nation's food production affected. In the common term of production, cash farm income, California represents about eight percent of the nation. In pounds of food, California represents nearly half of the commercial fruit production and more than ten percent of the vegetables.<sup>1</sup> Many fruits and vegetables are high labor requirement crops. California's labor shortage was also pronounced because of the proximity of concentrated areas of war industry offering employment inducements considerably more attractive than agriculture offered at the time.

The peak of the World War II farm labor crisis in California took place in the fall of 1942 when the shortage was estimated at between 35,000 and 40,000 workers for major seasonal operations.<sup>2</sup> Distributed equally with the work, this would mean about five workers to do the jobs of six, but by local areas of need, this proportion was frequently five workers to do the jobs of eight, ten, or more. The situation would have been even graver in the subsequent war years if supplemental sources of labor had not been found in the volunteers, Mexican Nationals, and Prisoners of War.

Geographically, California's farm labor problem is unusually complex because the temporary demands of widely scattered areas are dependent upon a migrant work force. During the war years this problem was intensified because normal movement of the remaining migrants was curtailed by shortages of vehicles, tires, and gasoline. According to estimates based on the year 1944,<sup>3</sup> thirteen of the fifty-eight counties have seasonal peaks requiring 10,000 or more workers. The maximum seasonal needs during 1944 for

<sup>1</sup> Based on reports of BAE, USDA.

<sup>2</sup> *California Weekly Agricultural Labor Report*, USES, 1942.

<sup>3</sup> *Labor Requirements for California Crops*, FL Project, AES, Berkeley, March, 1945.

twenty-five counties exceeded their respective minimum needs by 1,000 percent of more, not considering minor peaks between the minimum and maximum periods. The following table illustrates the extremes in a few principal counties.

LABOR REQUIREMENTS FOR MAJOR SEASONAL OPERATIONS, 1944<sup>4</sup>

County	Minimum		Maximum	
	Workers	When	Workers	When
Fresno	400	March	21,000	September
Imperial	Negligible	August	15,000	Feb.-Mar.
San Joaquin	1,000	February	17,000	Sept.-Oct.
Santa Clara	1,400	April	23,000	September
Sonoma	400	Mar.-Apr.	12,000	Aug.-Sept.
Stanislaus	200	March	13,000	Aug.-Sept.
Tulare	1,800	Mar.-Apr.	14,000	Dec.-Jan.
STATE	60,000	Mar.-Apr.	182,500	September

During the war years the Farm Labor Project of the Agricultural Extension Service has been concerned with the supplying of workers to agriculture through a system of county Farm Labor offices.<sup>5</sup> Because it was necessary to evaluate requests for workers, and because it was necessary to develop supplementary labor sources, this agency found need for more specific analysis of California's seasonal needs. Professor R. L. Adams had done considerable work in this field in connection with farm management studies.<sup>6</sup> Further knowledge was needed regarding labor requirements on a current and local basis. This was particularly important when the Farm Labor Project was called upon to certify as to the needs for Mexican Nationals imported for farm work, and to allocate the supply upon arrival. It was also important because government funds were being used through other agencies to facilitate transportation and housing of these workers.<sup>7</sup> Errors in estimating needs could be costly.

The Farm Labor Project made its first annual study of labor requirements for the year 1943.<sup>8</sup> A follow-up study, with certain re-

<sup>4</sup> Including drying labor but excluding packing house and shed labor in large non-farm establishments.

<sup>5</sup> Responsibility for farm placement service was transferred to AES from USES in the spring of 1943.

<sup>6</sup> Published by Giannini Foundation, University of California, Berkeley.

<sup>7</sup> Mexican Nationals were recruited and transported by the WFA Office of Labor. Their housing was facilitated by the California Farm Production Council, emergency state agency.

<sup>8</sup> *Labor Requirements for California Crops, 1943*, FL Project, Berkeley, May 1944.

visions, was made for 1944. The purpose of this paper is to describe the program and method of study for the latter year, 1944.

The method of analysis, procedures, and forms used were developed by the Farm Labor Market Analyst<sup>9</sup> under the direction of B. H. Crocheron, Director of Agricultural Extension, and Warren R. Schoonover, State Supervisor of the Farm Labor Project. The study was conducted as a county program during the winter months of 1944-1945 although some of the data were gathered during the preceding seasons of the specific crop operations. The Farm Advisor<sup>10</sup> and the County Farm Production Committee acted as sponsors and advisors, and the field work was directed by the local Farm Placement Manager of the Farm Labor Project. The basic information gathered was of two types: (a) Agricultural statistics for the county, including acreages and production of specific crops, and (b) Information regarding the conditions and factors which determine the labor requirements. Such factors include the disposition of crop, the major operations, man-day or crew-day output, extent of mechanization, length of the typical work week, seasons of activities, etc.

In collecting the necessary agricultural statistics, a practical attempt was made to avoid census taking and duplication of effort if reliable and adequate current data were available from existing information sources. These might include the Farm Advisor's own records, those of the Agricultural Commissioner, AAA, grower associations, cotton gins, canneries, shippers, etc. Because the value of the study as a basis for 1945 planning was dependent upon an early release date, and because final figures were not always available from these sources at the time needed, field surveys were necessary in a number of instances. Estimates for the county were based on data from a selected sample of typical farms producing most of the crop.

Information regarding the labor factors was based on actual observations on typical farms and knowledge provided by farmers contacted during the regular operations of the Farm Labor office.<sup>11</sup>

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<sup>9</sup> Lenhart, M. W., *County Program for Determining Farm Labor Requirements*, Manual of Instructions (Rev. 11-44), FL Project, AES, Berkeley, November, 1944.

<sup>10</sup> County agents of the Extension Service in California have the title of *Farm Advisor*.

<sup>11</sup> It was a policy in the undertaking to economize in travel, time and effort, and to take as little of the farmers' time as necessary to assure reliable results. A small sample of farms was usually adequate because the Farm Advisor's and Farm Placement Manager's acquaintance with local agriculture enabled a fairly reliable selection of representative or typical farms.

Utilization of the information gathered was accomplished by means of the *Work Sheet for Computing Farm Labor Requirements*.<sup>12</sup> The *Work Sheet* provides a practical formula for using the data to arrive at the approximate number of workers needed by weeks. A separate *Work Sheet* was prepared for each major crop in the county. These were worked out locally and reviewed and checked by the Farm Labor Market Analyst with the assistance of the farm management specialists of the AES. A state summary of the results was prepared, entitled *Labor Requirements for California Crops, Major Seasonal Operations, Based on estimated acreages and production for 1944*.<sup>13</sup> The summary is in the form of a calendar showing the labor requirements by weeks for each principal agricultural county. See sample page (Fig. 1).

The crops to be covered were pre-determined for each county in the set-up of the study. In the earlier 1943 survey the determination was left to the judgment of local personnel but the results were understandably somewhat inconsistent because of differences in the relative importance of the same amount of a given crop in different counties. For example, a county whose major crop might require a peak of 5,000 workers would tend to ignore one requiring a peak of 500; while the same amount—or even less—of the latter might be the major crop in a smaller agricultural county. Local personnel assisted in the selection of major crops and some additions to and deletions from the selected lists were made during the course of the study as the labor needs were analyzed in the field.

Usually a crop was included if at any time it might have a seasonal need for at least 100 hired temporary workers. Crops with lesser requirements were also included if the time of need overlapped with that of other crops, contributing to a local labor problem. Too, minor crops, or minor activities for major crops, were sometimes covered if distance between the area of need and a labor center made it difficult to secure even a few temporary workers. For example, it is easier to recruit 500 workers in some counties than 50 in others. It was reasoned that some slight inconsistency in coverage was offset by the need of the information for the problem area. It was not reasoned conversely, however, that major activities could be omitted if there seemed no apparent labor problem. Many unexpected losses in all parts of the farm labor supply in

<sup>12</sup> Form FL-16 (Rev. 11-44), FL Project, AES. See figures 2 and 3.

<sup>13</sup> Published by FL Project, AES, Berkeley, March, 1945.

recent years have proved that any major labor requirement is a potential problem and knowledge concerning it should be available.

A major seasonal operation was defined as one which is conducted during a special season of the year and which requires the addition of hired temporary workers to the farm labor force in order to get the work done. The survey instructions included a list of probable operations to be covered for each crop if applicable, even though the temporary labor requirements of some were low. This was to facilitate state total estimates for such operations, which might be a state problem if not a local one. Additional operations were covered for some counties. For example, because of an extremely large acreage, an activity which might not require a significant number of workers for a particular operation in most counties, might require quite a number in the exceptional county. Potato irrigating was included for Kern County for this reason. To irrigate the 53,600 acres (40,000 more than in any other county) there was a temporary peak need for 600 irrigators.

The extensive and detailed analysis made seemed justified when the results brought to light many wide variations in the labor requirements for a given crop in different counties. The variations frequently had little relation to the relative acreages involved. Differences in yield, varieties, and disposition of crop had a significant effect on the labor requirements. Differences in farm practices, mechanization, and in worker output accounted for some variation. Other differences were traceable to the distribution of the crop on large or small farms. For example, the haying labor requirements tended to be higher and the season shorter in counties growing hay for feed on small farms, with many farms harvesting simultaneously than in counties producing hay commercially on large farms where equipment was more mechanized and the same crews worked over larger acreages during a longer period.

The accompanying examples for peaches (Figs. 2 and 3) will illustrate the *Work Sheet* formula for computing the labor requirements, and also the reasons for variation in labor needs. The examples do not refer to specific California counties, but are typical of the general differences between the handling of the crop in the Sacramento Valley canning peach areas and the San Joaquin Valley market and drying peach areas. To illustrate the variations in labor needs due to differences in yield, disposition of crop, etc., the same acreage was assumed for both County I and County II.



Line No.	COUNTY AND CROP	Approximate Average Harvested	APPROXIMATE PRODUCTION	Total Man-Weeks of Labor	(Number of workers, weeks ending)															
					JANUARY				FEBRUARY				MARCH							
					8	15	22	29	5	12	19	26	4	11	18	25				
1	<b>EXPORT - TOTAL</b>			401,170	8,520	29,720	31,170	33,340	16,780	16,520	15,460	15,520	16,110	16,440	15,920	15,130				
2	Grapefruit (P)	3,800	24,750 tons	4,150	100	130	130	150	170	170	170	170	170	170	170	170				
3	Breadfruit	450	1,250 tons	1,350	200	300	300	300	280	200	150	140								
4	Add: Packing labor			900	80	130	140	140	140	130	80	60								
5	Cabbage (P)	3,300	11,900 tons	5,000	350	480	480	350	300	270	260	250	240	210	180	120				
6	Carrots	6,600	3,081,000 cwt (64)	110,250	450	1,100	1,500	1,500	6,600	6,600	6,500	6,300	6,300	6,300	6,300	6,300				
7	Add: Packing labor			8,600		250	300	350	400	400	450	450	450	450	450	450				
8	Lettuce	20,000	3,600,000 crates	44,600	3,000	2,600	2,500	2,500	2,400	2,200	1,500	1,000	700	700	700	400				
9	Add: Packing labor			14,400	1,400	1,400	1,500	1,500	1,500	1,400	1,000	700	450	450	300	300				
10	Melons-Cantaloupes & Muskmelons	15,700	18,400 tons	56,000	900	900	900	900	1,100	1,200	1,200	1,400	3,800	3,700	3,600	3,400				
11	Add: Packing labor			7,200																
12	Melons-Watermelons	7,000	49,150 tons	12,000	140	100	200	350	350	350	350	250	200	350	500	550				
13	Onions, Dry	300	50,000 cwt	3,100	100	100	100	100	100	60	50	50	50	50	50	20				
14	Pears (P)	8,500	11,500 tons	25,800	500	600	650	1,700	1,800	1,900	2,000	2,000	2,000	2,000	1,800	1,000				
15	Squash, Summer	3,000	500,000 crates	13,500	350	350	450	450	500	550	600	600	600	600	600	600				
16	Add: Packing labor			4,500	120	140	180	180	200	200	200	200	200	230	230	230				
17	Tomatoes	3,350	14,700 tons	22,100	450	450	400	400	500	500	500	500	500	850	950	1,100				
18	Add: Packing labor			3,700	70	70	70	70	80	90	100	100	100	100	150	150				
19	Flax	65,000	43,100 tons	3,000																
20	Grain, Small	60,000	90,000 tons	2,800																
21	Grain, sorghum	30,000	27,000 tons	1,500	200	170	120													
22	Hay, Alfalfa	130,000	570,000 tons	37,400																
23	Seed, Onion	800	160 tons	3,450	120	250	250	250	130	80	100	100	100	100	100	60				
24	Sugar beets	5,500	110,000 tons	13,200	100				150	250	250	250	250	200	200	100				
25	<b>DOMESTIC - TOTAL</b>			285,350	6,750	7,130	7,050	5,920	4,950	4,130	3,240	2,840	3,150	740	610	750				
26	Apples (P)(D)	400	1,400 fr tons	1,450	50	50	40	20												
27	Grapes, Raisins	9,300	19,500 dr tons	14,450	700	750	1,000	1,000	900	600	450	350								
28	Add: Drying labor			2,000																
29	Grapes, Table (D)	6,100	35,300 fr tons	15,550	400	400	550	550	400	300	200	200								
30	Add: Packing labor			2,550																
31	Grapes, Wine	2,000	20,200 fr tons	3,350	100	100	100	100	100	50	50	50								
32	Oranges, Naval	1,450	290,000 pld bxs	1,600	80															
33	Add: Packing labor			1,000	50															
34	Peaches (D)	640	6,000 fr tons	4,000	70	80	90	100	100	80	70	60	40	40						
35	Plums	2,000	14,000 fr tons	12,150	400	500	500	350	250	200	100									
36	Add: Packing labor			3,050																
37	Asparagus (P)	750	41,750 crates	2,000																
38	Melons-Cantaloupes, Muskmelons	1,000	7,500 tons	1,700						80	100	80								
39	Onions, Dry	600	120,000 cwt	3,150						20	20	30	40	50	60	40				
40	Pears (P)	1,600	448,000 crates	11,000																
41	Potatoes	53,600	11,524,800 cwt	53,000	400	750	750	1,000	1,000	800	750	750	250	100	200	200				
42	Add: Shed labor			14,000																
43	Tomatoes (P)	4,000	16,000 tons	8,600																
44	Cotton	61,000	84,550 bales	100,000	4,500	4,500	4,000	2,800	2,100	2,000	1,500	1,300	1,000	500						
45	Grain, Small	130,000	103,300 tons	3,000																
46	Hay, Alfalfa	62,000	310,000 tons	27,500																
47	Sugar beets	1,500	19,500 tons	2,400									20	30	50	100				
48	<b>KLING - TOTAL</b>			144,750	4,730	4,640	4,650	4,950	4,150	3,650	2,850	2,150	1,130	380	100	100				
49	Apples (P)	2,600	14,300 fr tons	6,850	130	170	250	400	400	400	400	250								
50	Add: Drying labor			9,400																
51	Grapes, Raisins & Muskmelons	10,550	33,350 fr tons	8,700	400	420	450	450	450	450	430	400	300	300						
52	Add: Drying labor			900																
53	Peaches (P)	2,850	24,750 fr tons	10,550	200	250	350	350	300	200	150	100								
54	Add: Drying labor			3,050																
55	Melons	900	6,150 tons	800																
56	Cotton	43,000	57,400 bales	83,000	4,000	3,800	3,600	3,300	3,000	2,600	1,600	1,400	750							
57	Flax	5,500	3,300 tons	200																
58	Grain, Small	142,000	49,200 tons	2,700																
59	Hay, Alfalfa	40,000	200,000 tons	20,800									80	80	100	100				

/ / Indicates harvest season although some of the workers may be engaged in overlapping activities (P) Includes packing and/or shed labor (D) Includes drying labor

FIGURE 1

## WORK SHEET FOR COMPUTING FARM LABOR REQUIREMENTS

(See Manual for Instructions)

PEACHES		Year 1944	1. Productive acres	2. Yield per acre	3. Production (In usual units. Specify size or weight. Indicate whether fresh or dry weight, field or packed box, etc.)	4. Production (In units for computing. Specify.)
Crop			10,000	12 F T		
County	No. 1	Partial Final	Net productive 2,000	Percent of normal 90%	120,000 F T	Same

6. Disposition of crop. (Indicate amount to each)

Packing house or shed	Dry	Dry yard	Other (Specify)
Capacity 120,000 F T		Dehydrator	

8. Steps in computing total man-weeks of labor necessary to handle the crop Note: Entries in columns (B), (C), (E), and (G) must be in same units.

[illegible]

\* As Acres. F T: Fresh tons.

7. Distribution of man-weeks. From (H). Note: Number of man-weeks per week represents number of workers required per week. Round all figures.

Trade Rating (Over and not used)		Operations.		Operatount		Operatoun		Operatoun		Operatoun.		Total All Operatoun		Do not write in this column
1345	1346	% of Work	No. of Workers	% of Work	No. of Workers	% of Work	No. of Workers	% of Work	No. of Workers	% of Work	No. of Workers	Number of Workers		
1- 6	1- 8	10	1,200									1,200		
1-13	1-15	10	1,200									1,200		
1-20	1-22	10	1,200									1,200		
1-27	1-29	18	1,200									1,200		
2- 3	2- 5	7	1,000									1,000		
2-10	2-12	5	700									700		
2-17	2-19	5	500									500		
2-24	2-26													
3- 3	3- 4													
3-10	3-11													
3-17	3-18													
3-24	3-25													
3-31	4- 1													
4- 7	4- 8													
4-14	4-15													
4-21	4-22													
4-28	4-29													
5- 5	5- 6			10	1,500							1,500		
5-12	5-12			12	1,800							1,800		
5-19	5-20			15	2,000							2,000		
5-26	5-27			15	2,000							2,000		
6- 2	6- 3			15	2,000							2,000		
6- 9	6-10			15	2,000							2,000		
6-16	6-17			11	1,600							1,600		
6-23	6-24			7	1,000							1,000		
6-30	7- 1													
7- 7	7- 8													
7-14	7-15													
7-21	7-22													
7-28	7-29					3	500					500		
8- 4	8- 5					4	1,000					1,000		
8-11	8-12					12	2,000					2,000		
8-18	8-19					20	5,500					5,500		
8-25	8-26					20	5,500					5,500		
9- 1	9- 2					20	5,500					5,500		
9- 8	9- 9					16	2,700					2,700		
9-15	9-16					4	600					600		
9-22	9-23													
9-29	9-30													
10- 6	10- 7													
10-13	10-14													
10-20	10-21													
10-27	10-28													
11- 3	11- 4													
11-10	11-11													
11-17	11-18													
11-24	11-25													
12- 1	12- 2	6	800									800		
12- 8	12- 9	9	1,100									1,100		
12-15	12-16	10	1,200									1,200		
12-22	12-23	10	1,200									1,200		
12-29	12-30	18	1,200									1,200		
Totals	100%	125,500	100%	15,900	100%	16,700	100%		100%		100%	425,100		

Prepared by \_\_\_\_\_ Approved by \_\_\_\_\_ Date \_\_\_\_\_

# WORK SHEET FOR COMPUTING FARM LABOR REQUIREMENTS

(See Manual for Instructions)

Crop	Year	1. Productive acres	2. Yield per acre	3. Production (In usual units. Specify size or weight. Indicate whether fresh or dry weight, solid or packed box, etc.)	4. Production (In units for computing. Specify.)
PEACHES	1944	10,000	8 F T		
County	No. 11	Yield 2,000	Percent of normal	80,000 F T *	SAME

5. Disposition of crop. (Indicate amount to each)

Packing house or shed	45,000 F T	Dry yard	25,000 F T	Other (Specify)	
Canney	5,000 F T	Dehydrator		Local market	5,000

6. Steps in computing total man-weeks of labor necessary to handle the crop. Note: Entries in columns (B), (C), (D), and (E) must be in same units.

Activity or Operation	Amount of Crop Involved (Same or same units as in Item 1)	Daily Output of Crew	Average No. in Crew	Output per Man-Day (C) x (D)	Average days per unit and week	Output per Man-Week (E) x (F)	Total Man-Weeks (G) x (H)	Season				Percent of Work by	
								Start	Peak	To	End	Fixed Labor	Family
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)				(J)	
Prune	12,000 A *			.25 A	5	1.25 A	9,600	11-1	12-15	1-31	2-15	90%	10%
Thin	10,000 A			.2 A	6	1.2 A	8,533	4-25	5-15	6-5	6-15	90%	10%
Pick to market	50,000 F T			.75 F T	6	4.5 F T	11,111	6-15	7-15	8-25	9-10	97%	3%
Pick to can or dry	30,000 F T			1.0 F T	6	6 F T	5,000	7-15	7-25	9-1	9-5	97%	3%
Cut to dry	25,000 F T			.5 F T	6	3 F T	8,333	7-15	7-25	9-1	9-10	98%	2%
Dry	25,000 F T	6 F T	4	1.5 F T	6	9 F T	2,778	7-15	8-1	9-5	9-15	90%	10%
Packing shed	45,000 F T	56 F T	80	.7 F T	7	4.9 F T	9,180	6-15	7-15	8-25	9-10	100%	0%
* A = Acres; F T = Fresh tons													

7. Distribution of man-weeks. From (H). Note: Number of man-weeks per week represents number of workers required per week. Round all figures.

Week Ending Closest to last week	Operations PRUNE		Operations THIN		Operations To pick To can or To dry		Operations CUT TO DRY		Operations DRY		Operations PACKING SHED		Total All Operations	Do not write in this column
Week	Week	No. of Workers	No. of Workers	No. of Workers	No. of Workers	No. of Workers	No. of Workers	No. of Workers	No. of Workers	No. of Workers	No. of Workers	No. of Workers	Number of Workers	
1- 6	1- 8	9	800										800	
1-13	1-15	9	800										800	
1-20	1-22	9	800										800	
1-27	1-29	8	800										800	
2- 3	2- 5	6	600										600	
2-10	2-12	4	400										400	
2-17	2-19	2	200										200	
2-24	2-26													
2- 3	2- 4													
2-10	2-11													
2-17	2-18													
2-24	2-25													
2-31	2- 1													
2- 7	2- 8													
2-14	2-15													
2-21	2-22													
2-28	2-29													
2- 5	2- 6													
2-12	2-13													
2-19	2-20													
2-26	2-27													
2- 3	2- 4													
2- 9	2-10													
2-16	2-17													
2-23	2-24													
2-30	2- 1													
3- 7	2- 8													
3-14	2-15													
3-21	2-22													
3-28	2-29													
3- 4	3- 5													
3-11	3-12													
3-18	3-19													
3-25	3-26													
3- 1	3- 2													
3- 8	3- 9													
3-15	3-16													
3-22	3-23													
3-29	3-30													
4- 5	4- 6													
4-12	4-13													
4-19	4-20													
4-26	4-27													
5- 3	5- 4													
5-10	5-11													
5-17	5-18													
5-24	5-25													
5-31	5-32													
6- 7	6- 8													
6-14	6-15													
6-21	6-22													
6-28	6-29													
7- 5	7- 6													
7-12	7-13													
7-19	7-20													
7-26	7-27													
8- 2	8- 3													
8- 9	8-10													
8-16	8-17													
8-23	8-24													
8-30	8-31													
9- 6	9- 7													
9-13	9-14													
9-20	9-21													
9-27	9-28													
10- 4	10- 5													
10-11	10-12													
10-18	10-19													
10-25	10-26													
10-31	11- 1													
11- 7	11- 8													
11-14	11-15													
11-21	11-22													
11-28	11-29													
12- 5	12- 6													
12-12	12-13													
12-19	12-20													
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1- 2	1- 3													
1- 9	1-10													
1-16	1-17													
1-23	1-24													
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2- 6	2- 7													
2-13	2-14													
2-20	2-21													
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4-30	5- 1													
5- 7	5- 8													
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7-23	7-24													
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8-20	8-21													
8-27	8-28													
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9-24	9-25													
10- 1	10- 2													
10- 8	10- 9													
10-15	10-16													
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10-29	10-30													
11- 5	11- 6													
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2-11	2-12													
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3- 4	3- 5													
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7- 1	7- 2													
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7-15	7-16													
7-22	7-23													
7-29	7-30													
8- 5	8- 6													
8-12	8-13													

But before analyzing the variations, let us consider the use of the *Work Sheet* and the labor requirement formula as illustrated for County II,<sup>14</sup> which has more complicated factors than County I. The basic crop data include the acreage, yield per acre, production, and disposition of crop as called for in Sections 1 through 5. Section 6 contains the steps in computing the total man-weeks of labor necessary to handle the major seasonal operations, which are listed in Column (A) of this section. These are: prune, thin, pick to market, pick to can or dry, cut to dry, dry, and pack. The reason picking was separated by disposition of crop is that selective picking by color and size for market was found to have a lower worker output than picking for canning or drying, when less selection is necessary.<sup>15</sup> Cutting was considered separately from the other dry yard operations because women could do the cutting and it was therefore significant to know this part of the labor requirement separately.

Column (B) contains the amount of crop involved in the operation, indicating the size of the task. If the operation is measured by the acre, the amount would be in terms of acres. If the operation involves handling the product, the amount would be stated in tons or number of boxes handled. It was recommended that containers be converted into tonnage weight for most fruits, except citrus, because this would mean that the computations would involve smaller numbers and, accordingly, be more easily and more accurately computed.

Column (C) provides the crew-day output for certain combined operations, such as those of a dry yard or packing shed, because the tasks concerned were so varied that it was impractical to measure the output of individual workers. It was possible to measure the output of the crew and from this information, and the number in the crew, as given in Column (D), it was possible to determine the *equivalent* of a man-day output. The operation "dry" included all miscellaneous dry yard tasks except cutting which is shown separately for the reason indicated. The operation listed as "packing shed" includes all packing house work involving the handling of the fruit.<sup>16</sup>

<sup>14</sup> The dimensions of the actual *Work Sheet* are 11"×17". The size provides space for several operations and for writing information in longhand or on the typewriter (12" carriage). Folded in half, the form is letter size (8½"×11") which is convenient for filing and mailing.

<sup>15</sup> Not always the case. Some counties pick all the crop on the same basis and it is later sorted, with the choice fruit going to market and the remainder to dry yard.

Column (E) contains the output per man-day for the operations, stated in the same units as the amount of crop in Column (B). The worker output factor was the usual daily output of the *typical* worker under typical crop and working conditions existing in the year covered. It was obtained in a number of ways—sometimes by selecting the mode in a listing of observations from the sample of typical farms. Sometimes it was more accurately secured from payroll statistics when workers were paid on a piece-work basis. Sometimes it was weighted by distinct differences noted by variety of the fruit or by districts varying in working or crop conditions, none of which could be considered typical for the county. In extreme cases like this, however, it was usually recommended that the parts of the crop be considered separately in a breakdown similar to that shown for picking in this illustration. If the daily output of the worker was not readily measureable, as for grain hands, sugar beet workers, and other crew laborers, the output was the *equivalent* per man-day obtained by dividing the crew-day output by the number in the crew, or Column (C) divided by Column (D).

Column (F) contains the average number of days worked per week, which was determined by weather, nature of the work, and habits of the workers. Picking might be in progress seven days a week, but the average days worked refers to the number put in by the typical person which might be but five or six days. This limitation of the work week was practical because it allowed for non-productive time by persons who would necessarily be part of the required work force in the area in order to get the work done. The Farm Labor Project must think of labor requirements in terms of human beings, rather than man-hours of requirement per acre, for example. It was assumed that for practical purposes, a man-week of work represented one person on the job and the usual accomplishment which could be expected of him during a week. Ignored, however, were labor turnover and the lag between jobs by shifting workers. There is little reasonable basis for estimating these factors, which represent additional non-productive time. Justification of this limitation in the figures may be found in the fact that during periods of labor stringency, the recruitment agency should attempt

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<sup>15</sup> Packing labor was covered because the Farm Labor Project operates under the definition of agricultural labor which includes the "preparation of fruits and vegetables for market." Packing labor requirements of large non-farm establishments were usually considered separately so that they could be excluded when analyzing the on-farm problem.

to meet the minimum reasonable requirements only, and then assist in the more complete utilization of the minimum work force on hand.

Column (G) contains the output per man-week, which is obtained by multiplying Column (E) by Column (F) for each operation.

Column (H) contains the total man-weeks of labor necessary to accomplish the task listed in Column (A), and was computed by dividing the size of the task in terms of acres or units of production, by the output per man-week, or Column (B) divided by Column (G).

Column (J) contains the season, subdivided into four dates representing the start of activity, the beginning and end of the peak, and the end of the activity. This was determined from observations, shipping data, or other clues including inspection reports of tonnages weighed into the canneries. The seasonal dates were used to guide in distributing the man-weeks in Section 7.

Column (K) gives a *very general* estimate of the proportion of the work done by hired labor and by the farmer and unpaid family workers. Its principal value was to guide in throwing out borderline seasonal operations which, as it turned out, were done primarily or entirely by family labor. It was found that although family members were usually at work during the seasons of the covered operations, their share of the man-weeks given to the operation was not often significant, especially when distributed by weeks. Instead, family workers were supervising and doing auxiliary tasks to keep the work going, and for which man-weeks of labor requirements were not computed.

Section 7 contains the distribution of the man-weeks of labor by weeks during the seasons when the work was done. The resulting figures represent the approximate number of workers needed during those weeks. The man-weeks were distributed for each operation listed in Section 6, but not necessarily in the same breakdown. For example, it will be noted that the man-weeks for picking were added together and distributed in one column, although weighted in proportion to the season of picking for market and of picking to can or dry. The man-weeks were distributed by applying an estimate of the percent of work done by weeks to the total man-weeks for the given operation as shown in Column (H). For a product measured at a central point of handling, such as cotton at the gins, a guide to percentage distribution for the harvest operation could be secured from the percent of the total production handled by weeks. Dis-

tribution of the man-weeks on a percentage basis was not always necessary, however. By guessing the probable peak number of workers and distributing the remaining man-weeks on the basis of knowledge of the probable rise to and descent from the peak, a trial distribution could be made. If the total in the column agreed with the total man-weeks computed for the operation, the guessed peak and distribution could be accepted as reasonable, deleting the step of computing the percentages. If the guessed distribution proved in error, adjustments could be made until a reasonable distribution and the correct total of man-weeks were secured.

The man-weeks added horizontally for each week indicates the approximate number of workers to handle the crop's most significant operations. The grand total of this column should balance with the sum of the totals for the operations, which in turn should balance approximately with the total of Column (H). It will be noted that all figures in Section 7 were rounded—usually upward—for convenience and because the estimates could be assumed to represent probable minimum requirements.

In comparing the labor requirements for 10,000 acres of peaches in County I and County II, the following facts are of interest. Although the production in County I exceeded that in County II by 50%, the total man-weeks were 26% less—primarily because of the difference in the disposition of the crop in the two areas. Considering picking labor only, the man-weeks for County I exceeded those for County II by less than 4% even though 50% more tons were picked. This is explained upon comparing the worker output for picking in the two counties, Column (E). In County I the output was 1.2 tons, with all picking for canning; while in County II it was .75 ton for market picking and 1 ton for picking to dry or can. The most likely reason why the output for picking for canning in County II was slightly less than in County I is the difference in yield per acre, which was higher in County I. When the fruit is abundant, it takes less time to fill a box.

In addition to comparing the labor requirements in terms of total man-weeks, let us note the differences in the numbers of workers required by weeks. Because of the longer season for picking in County II, the peak number of workers needed at any one time was about 39% less than the number needed during the peak in County I, even though the total man-week requirement for picking was only 3½% less. But considering the additional labor necessary to dry and pack the crop in County II, the peak number of workers

needed for all the harvest operations in County II exceeded the peak number for the harvest in County I by about 42%. The value of the work sheets in portraying the distinct differences in the nature of the peach labor problem in the two counties is readily discernible.

The uses of the work sheets and the state summary have been varied. First of all, the preparation of the work sheets was an education for the field personnel of the Farm Labor Project, acquainting them with the agriculture of the county and furnishing an operating guide in labor recruitment. The figures were particularly helpful in evaluating the requests for Mexican Nationals and other supplementary workers by local growers. At the state level the work sheets were helpful in bringing to light the reasons for some difference in the apparent labor needs of two areas, as for peaches in Counties I and II, also for evaluating the relative needs for Mexican Nationals in different counties at a given time, and for what work. The state summary was used by the field personnel in giving information to migrants inquiring for work in other areas and in relating local labor problems to those of nearby areas. The state summary was helpful to the state administrators in analyzing the state total needs and in anticipating problem areas and problem seasons. It served as a guide in estimating probable shortages and in making requests for supplementary workers such as volunteers, Mexican Nationals, Prisoners of War, etc.—also in the distribution of such workers. The state summary also served to present the scope of California's agriculture and labor needs to the national administrators of the War Food Administration.

In conclusion, it should be pointed out that farm labor requirement analysis of this type requires almost continuous attention because of rapid changes in many of the factors involved. Although the early release of the 1944 summary served as a guide for long range planning for 1945, follow-up studies continue with preliminary 1945 work sheets being prepared about six weeks, or even three weeks in advance of the problem operations—just as soon as the acreage, yield, and season seem fairly predictable. This is the time of greatest need for the information since it immediately precedes the time of labor recruitment operations. The labor supply is becoming evident and the differences in the predicted supply and the estimated requirement give a practical basis for immediate recruitment activity at the local level, and for possible emergency adjustments in the allocation of supplementary workers at the state level.



## NOTES

### WILL GOVERNMENTAL PROGRAMS ALTER THE STRUCTURE OF GOVERNMENT?

THE choice in the modern world with respect to the part to be played by government in economic activities clearly is not one between some participation or none at all. Instead, it relates to the kinds and degrees of government participation. *Laissez faire*, if it ever did exist, is ruled out in the complex economic society of today. In arriving at decisions with respect to the role of government, it is not adequate to think only in terms of what government can or cannot do. We also should give due weight to effects of governmental programs on the citizens themselves, on the relationships between the citizens and their government, and on the structure or organization of government. This aspect of public policy has received entirely too little attention in the formulation of programs

The development of a money economy inevitably led to the centering of attention on matters of price. Much of current public policy and proposals for expanding the role of government relates in one way or another to prices or other factors affecting income and its distribution. It is clear that faith in the operations of the market as a register of price has been and is undergoing modifications. Pressure is strong for governmental participation in, if not actual usurpation of, the market's function of arriving at prices.

The protective tariff is one of the time-honored devices for influencing the market by reducing supplies of foreign origin with the intent of increasing prices for the benefit of the domestic producer. While taxes usually are viewed as providers of public revenue, they also may be used to affect competition. The federal tax on colored oleomargarine, some state taxes on the same product, and special taxes on chain stores are illustrations. Taxes also may be employed for the specific purpose of changing the distribution of income.

Health and sanitary regulations, and regulations relating to grades, standards, labelling, working conditions, maximum hours of work, and minimum rates of pay are other forms of governmental controls which may have an important bearing on price. Antitrust laws, patent rights, curbs on monopoly and restraint of trade, assistance and encouragement to labor and farmers' organizations

may be cited as other illustrations of governmental activities in this category.

The types of activity referred to above serve to modify the effect of forces in the market rather than to have the government take the place of the market in arriving at prices. There are instances of more positive and direct action by government. The regulation of transportation and public utility rates falls in this class. Such regulation rests on the limitations of competition in protecting public interest in the case of "natural" monopolies. In recent years, however, pressure has increased to have governmental agencies take an active part in price determination to yield higher prices for specific, special interests rather than limit its concern primarily to protecting the public interest. The "stabilization" operations of the Federal Farm Board were a sample. Public funds were used to buy and hold supplies off the market in order to support a given price structure.

Subsequently, parity price was evolved as a yardstick for measuring price relationships and to serve as a goal for agricultural price policy. Considerable administrative flexibility was provided in making commodity loans under the agricultural adjustment program at the outset but by subsequent congressional action they now are made at a certain percent of parity. Congress has assured support prices for many farm products for a period beyond the war which will obligate the government to step into the market picture if and when needed to keep prices from falling below the specified level.

These activities are not restricted to agriculture. The wages and hours law establishes government control of the work week and minimum rates of pay. While the government has not committed itself to provide jobs for all workers at the established rates, pressure for such action appears to be increasing. Price-maintenance laws have been enacted to meet the demands of some lines of business. Much of the NRA program was concerned with price and wage maintenance, if not by government itself at least with strong governmental blessing and support for such activity by private groups.

What will the future bring? Clearly, the end of demands for special price action by government is not yet in sight. It is argued that farmers have a "right" to receive certain prices and that government has an obligation to guarantee that "right." It is likewise

contended that workers have a "right" to a job at certain minimum rates of pay which should be guaranteed by government. Views differ as to what such "rights" involve. Do they merely require of government that it seek conditions favorable to production and employment, or must government go further and provide individual prices, wage rates, markets and jobs?

If the government makes guarantees, it must have the means of backing them up. This calls for control. Thus, a government-sponsored price at an attractive level may result in expanding output while discouraging consumption and exports and inviting replacement by substitutes.) What shall government do about these consequences? Will its price controls not force it to add rigid production control and assume responsibility for disposal? If minimum wage rates are established at higher rates than some workers can earn by their production, even in times of prosperity, will government have an obligation to supply jobs to such individuals? Will such jobs be provided by "made" work or will the government extend its operations into fields which may compete with private endeavor?

Controls once established are not easily discarded. They create vested interests in their continuance. Candidates for public office find increased temptation to rely on the vote appeal of promises to provide better prices and higher wages for their particular constituents by extension of government activity and to insulate the position of special groups with the result that welfare of all tends to be shoved into the background. Officials may be elected on the strength of their appeals to group selfishness. If this trend increases, how will it affect the nature and structure of government? Who is to represent public interest under such circumstances?

Can controls of the kind here referred to be handled effectively by any other than a strong, central government? If such a government relies for its continuance mainly on its appeal to the immediate and narrow self-interests of special groups, is the step to dictatorship a very long one? The particular banner under which that dictatorship parades into power may be less important than appears to be realized by some who express great fear of and opposition to fascism but who apparently are ready to clasp to their bosoms other ideas which in the end may prove equally restrictive of individual liberty.

This note is intended to raise questions rather than to arrive at

conclusions by endeavoring to provide pat answers. Its aim is to stimulate thinking and provoke discussion rather than to attempt to formulate any final judgment. If the points raised have any merit do they not suggest that it behooves us to "stop, look and listen" in our development of public policy and programs to assure ourselves that we are reasonably alert to the full range of consequences of any given proposal? An agile-minded friend recently quipped "the first step in sin is irreversible." This may not apply with equal force to governmental controls, but may we not arrive sooner than we expect at a point where it may be extremely difficult to extricate ourselves from the morass of regimentation so that the march actually may prove to be irreversible?

Perhaps a few tentative ideas on the role of government may be in place. Some activities have become so well-established as public functions that question no longer is raised about government performing them. No one is clamoring for a private army or navy. Police protection and, in the case of urban centers, fire protection are accepted generally as public responsibilities. Roads, schools, the post office are other accepted governmental activities. This was not always the case and that fact should make us cautious about being too dogmatic regarding what may or may not prove to be normal functions for public agencies in the future.

But what about those spheres of our economy which the government to date has left largely to private endeavor? What happens here in the years ahead will decide where the dividing line between public and private activity will be drawn. Every game requires certain rules. In simple games with a limited number of participants, the rules may be drawn and enforced by the participants. However, in most cases specific rules are needed and where any considerable number of persons are involved, a referee to enforce observance becomes essential to satisfactory results. No one will get unduly disturbed if the player of solitaire adjusts the rules to suit himself. In bridge, adherence to prescribed rules is accepted as a matter of course. A college football game would soon degenerate into wholesale mayhem were there not both rules and officials to enforce them. While there are differences with respect to the rules required, few dispute the logic of having the government serve as rulemaker and referee to see that the economic game is played fairly and in the interests of the common good. The area of disagreement expands rapidly, however, when it is proposed that the

rulemaker and the referee be called upon to run with the ball as one of the players.

There is general support for government curbs on monopolies and combinations which operate contrary to public interest. In too many cases, bias makes it difficult for an individual or a group to appreciate that the guilt is not always elsewhere. It is common to regard some one else as the culprit. Too often, competition is viewed as a desirable practice for everyone except our own group. But if private monopoly is replaced by public monopoly, is it necessarily true that it will be more attractive? May not the latter form of monopoly also be used to serve special group interests rather than the ends of general welfare? What effective controls are left if a public monopoly should go berserk and abuse its power? Some may answer that the control remains in the ballot but how effective will that be if voting is guided by considerations of special interest rather than general welfare?

Perhaps a guiding principle can be developed out of the idea that government should be concerned with general welfare, that is welfare which runs clear across the board, rather than with that of special groups. Government may be on surer ground in undertaking activities which seek to provide certain minima for all than when it endeavors to provide special privileges for certain groups. There is need for a general guide to help determine the future extent and direction of governmental participation in economic activities. Do not rural social scientists have a responsibility for taking a leading part in its development?

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#### FARM REAL ESTATE VALUES IN SOUTH DAKOTA AND THE BAE INDEX OF ESTIMATED VALUE PER ACRE OF FARM REAL ESTATE

**D**URING the recent past the writer has repeatedly read references to the 1912-14 = 100 BAE index numbers in support of what appeared to him as inflationary trends in land prices. Real estate men, country bankers, newspapers, farm papers, a state secretary of agriculture, commercial organizations and a bankers association have cited the above index in support of the contention

that current land prices in the West North Central states in general, and South Dakota in particular, were conservative or even depressed. Mark M. Regan calls attention to the widespread extent of similar misinterpretations of the 1912-14=100 index of real estate values.<sup>1</sup>

The implications or positive affirmations in the contentions referred to have been that these BAE land value index comparisons furnish "reliable statistical evidence" that Northwest land values are not inflated. The index also has been used to "prove" that South Dakota farm real estate prices during World War II have been way below normal, long-run, or justifiable levels. The rather common use of a pre-World War I base in agricultural programs and literature seems to have created a belief that prices or price relationships at that time were fundamentally and permanently right. Thus, the BAE farm real estate index number of 57 for South Dakota as of March 1, 1944, has been referred to as proof that such prices were low. It has even been stated that there is a "need" for much higher prices for the "benefit" of farmers. The 1940 census value of \$12.80 per acre for South Dakota as compared with \$38.63 for 1910 have likewise been used as "evidence" that current land prices were abnormally low.

These misinterpretations, in part at least, may be due to the apparent fact that the above index numbers and prices too often are quoted without citing essential explanations of their construction and meaning. Changes in economic conditions affecting land prices also too frequently are overlooked.

An example of change in conditions influencing the average South Dakota land value is found in data on acreage in farms and the geographic distribution of the acreage added to land in farms between 1910 and 1940. In this connection it is well to recall that precipitation in South Dakota varies from about 25 inches in the southeast to about 14 inches in the northwest. The resulting geographic variations in land prices are much greater.

By 1910 the most productive eastern one-third of South Dakota was pretty well settled. During the next 30 years the acreage of South Dakota land in farms was increased by 51 percent. Most of the increase of 13,456,692 acres has taken place since 1914. This is indicated by data on assessed acreage. This increase was distributed as follows: The 23 eastern counties increased their acreage

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<sup>1</sup> "Land Value Benchmarks" in *The Agricultural Situation* for September, 1943.

by 305,429 or 3.4 percent. The 22 central counties increased their acreage by 2,415,670 acres or 26 percent. But the 23 western counties increased their acreage of land in farms by 10,735,593 acres, or 141 percent. Presumably the most valuable land in each area had been taken first.

Certainly, as far as the census values are concerned, it is obvious that the 1910 and the 1940 farm real estate price averages for South Dakota are based on lands and acreages that are neither the same nor comparable. The inclusion in the more recent census average of prices of added land of low productivity, hence of low value, has reduced the 1940 average value. Thus the 1940 state average census value would be below the one for 1910 even if the price on every tract of land had been static.

This addition to South Dakota land in farms since 1912-14 of much western land of lower productivity has been taken into consideration in the construction of the Bureau's 1912-14 = 100 index of estimated real estate values. For South Dakota the land value reports of the crop reporters, one of the chief sources of the Bureaus' data, have been weighted by crop reporting districts<sup>2</sup> for all years except 1912.<sup>3</sup> "The index is weighted with constant weights. The total acreage of all land in farms reported by the census of 1925 is used for this purpose."<sup>4</sup> "Weighting within States is desirable primarily to give greater stability to an average otherwise likely to be distorted by shifts in the number of reports received from various sections of the State."<sup>2</sup>

In spite of such care in the construction of this index number, the addition of much low grade land may possibly have depressed the index somewhat in the years since 1912-14. At least, this may be implied from the following quotations: "It is believed that the department's series are much less subject to this disturbing influence (than the census series) since its crop reporters tend to be drawn mostly from established farming sections. Expansion into new areas is reflected but slowly in the number of reporters appearing on its rolls."<sup>2</sup> "The use of the index with 1935-39 = 100 does not overcome the effect of the addition of much low grade land to land

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<sup>2</sup> "Appendix, Sources of Data and Methods of Computation," USDA Circular 15, "The Farm Real Estate Situation, 1926-1927."

<sup>3</sup> Letter of June 8, 1945, from A. R. Johnson, Agricultural Economist, Division of Land Economics, BAE.

<sup>4</sup> USDA Circular No. 209, "The Farm Real Estate Situation, 1930-31," pp. 64-65.

in farms during the early years of the series except insofar as the 1935-39 base period is considered more nearly 'normal' than 1912-14."<sup>8</sup>

With respect to the use of index numbers to show the World War II land price rise in South Dakota, use of the 1935-39 = 100 base seems preferable. With index numbers of this type there may be a popular assumption that 100, the base, is normal or justifiable. From this point of view a March 1, 1945 index of 119 seems more nearly right than 62, the latter being the index on the 1912-14 base.

A number of factors affecting land values have changed since pre-World War I, as Mark M. Regan so ably has shown. Land values actually have changed but the extent of these changes have not been the same in all geographic areas. Statements by various individuals and other evidence indicates that in the agriculturally newer areas in South Dakota, western, low-precipitation areas, land prices were inflated between 1910 and 1920. The following table points in the same direction.

It seems reasonable to assume that the productive possibilities of all South Dakota lands were better known in 1944 than in 1910. If this be true, it appears that many 1912-14 land values in South Dakota also were inflated. Hence, the current BAE land value index for South Dakota on the 1912-14 base may be abnormally low

COMPARISON OF 1910 CENSUS VALUES AND 1944 AVERAGE SALE PRICES PER ACRE IN SELECTED COUNTIES OF SOUTH DAKOTA

Counties	Computed 1910 census value of land and buildings	1944 average sale price per acre <sup>5</sup>	Normal annual precipita- tion in inches	Percentages which 1944 sale prices are of 1910 census values
Clay	\$76.28	\$82.55	25	108
Brookings	51.66	40.26	22	78
Brown	52.59	22.30	20	42
Haakon	15.21 <sup>6</sup>	1.53	16	10

<sup>5</sup> Data from cooperative study by Lincoln office BAE and South Dakota Agricultural Experiment Station. Only four counties studied.

<sup>6</sup> This is a computed figure; Haakon was part of Stanley County in 1910.

partly because many of the base year values were inflated. Not all people interpret that index in favor of higher land prices, however. An unusually well informed South Dakota real estate man said



confidentially, "It is dangerous to push land prices above the 1944 level."

All in all, it would seem desirable for the Bureau of Agricultural Economics to emphasize the use of a more recent base, possibly the 1935-39, for its current land value index. If this does not materially reduce the popular misinterpretations of the index, perhaps the BAE should also develop an economic productivity index of land values.

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### THE CONSISTENCY OF U.S.D.A. ESTIMATES OF POSSIBLE CONSUMPTION AND PRICES OF BEEF AND PORK IN 1950

THE United States Department of Agriculture recently issued a pamphlet<sup>1</sup> containing estimates of consumption, production and prices of various agricultural commodities, figures which could be associated with certain economic conditions in 1950. The following quotation from page 5 of the above pamphlet reveals the USDA's intentions regarding the interpretation of these figures:

"If farm people are to help develop constructive programs in the post-war period, they must understand their direct interest in national and international economic decisions which of necessity will be made at the close of this war—and understand the more basic relations of agricultural affairs to over-all national and international policies. The purpose of this analysis is to provide an aid to such understanding by describing the economic conditions likely to be associated with various degrees of employment and unemployment in the post-war period, and to indicate the most probable effect of these conditions on the price-and-income position of agriculture. *The estimates presented are not forecasts of what will happen after the war, but are intended to illustrate what is most probable under stated alternative assumptions with respect to employment, price levels, productivity of labor, and related factors.* The Bureau of Agricultural Economics is the source of statistical data and estimates used in this report."

<sup>1</sup> "What Peace Can Mean to American Farmers, Post-War Agriculture and Employment." Miscellaneous Publication No. 562, U.S.D.A., Washington, D. C., Issued May, 1945.

Of the numerous estimates, the four which are given particular consideration in this discussion are the per capita consumption and prices of beef and pork. It is the purpose of this paper to examine the likelihood of the above four estimates from another point of view. The author proposes to determine whether or not the four estimates of consumption and price are consistent with one another, taking into account the facts that beef and pork are close substitutes, that relative consumption is not independent of relative prices and also that the price influence depends on the level of income. In economic theory there is a sound basis for relationships between relative quantities. Lionel Robbins,<sup>2</sup> for example, places great emphasis on the relativity of economic variables. Also, in analyzing actual statistical data it is often easier to get reliable estimates of relationships involving relative quantities and prices. Furthermore, even though relationships involving relative variables are not sufficient in planning these relationships could be used to advantage in checking estimates of actual quantities and prices obtained from other sources. In this particular case the beef-pork consumption and price ratio based on the U.S.D.A. estimates will be compared with past ratios. Also the consistency of these ratios will be checked by applying the results of an earlier study<sup>3</sup> carried out by the author.

TABLE I. U.S.D.A. ESTIMATES AND RANGE OF VALUES IN PAST

Description	1943 Value	1950 Est.	Range for 1921-1940	
			Low	High
1. Beef Cattle Price (\$/cwt.)	11.80	10.25	3.28*	10.37*
2. Hog Price (\$/cwt.)	13.70	11.25	2.60*	12.98*
3. Beef and Veal Consumption (lbs./cap.)	57.7	71.0	53.0	74.6
4. Pork and Lard Consumption (lbs./cap.)	87.1	96.0	57.7	88.9
5. Net National Income (\$ billions)	149.4	150.0	—	—
6. U. S. Population (millions)	—	144.0	—	—

\* Monthly averages.

### *A Comparison of U.S.D.A. Estimates with Past Data*

Table I presents those estimates given in the U.S.D.A. report which will be the basis for the subsequent discussion.

<sup>2</sup> Lionel Robbins, *An Essay on the Nature & Significance of Economic Science*, 2nd ed.; Macmillan and Co., Limited, London, 1935; pp. 46-71.

<sup>3</sup> Zenon Sztatowski, "Time Series Correlated with the Beef-Pork Consumption Ratio," *Econometrica*, January 1945.

Except for income and population figures past data for the same series are given in the U.D.S.A. report<sup>4</sup> on livestock statistics. The prices used are those received by farmers. Low and high values of the series under consideration have been added in order to compare the U.S.D.A. estimates with the past and, from such a comparison, it is evident that all of the estimates are relatively high.

Since the series used in the author's study were slightly different from those estimated by the U.S.D.A. (for example, the author used the wholesale price of beef in Chicago instead of the price received by farmers), it was necessary to calculate the former from the U.S.D.A. figures. These data are presented in Table II.

TABLE II. ESTIMATES OF SERIES USED IN AUTHOR'S ANALYSIS

Description	1943 value	1950 values based on U.S.D.A. estimates	Range for 1921-1940	
			Low	High
1. Price of Beef Steers at Chgo. (\$/cwt.)	15.80	14.10	4.95	15.91
2. Price of Hogs at Chgo. (\$/cwt.)	14.31	11.75	3.04	14.01
3. U. S. Consumption of Beef (lbs./cap.)	50.1	62.2	46.4	64.9
4. U. S. Consumption of Pork (lbs./cap.)	72.9	79.4	48.1	74.2
5. Real Income (\$ per cap.)	715	715	318	470
6. U. S. Population (millions)	—	144	108.2	132.0
7. Ratio of Beef to Pork price	1.068	1.200	.767	1.827
8. Ratio of Beef to Pork Consumption	.688	.785	.660	1.093

Price and consumption values given in Table II were calculated from the corresponding figures in Table I by using regression lines obtained graphically from 1931-1940.<sup>5</sup> The 1950 real income estimate is consistent with the real income figures used in the author's study and is assumed to be the same as in 1943. (The U.S.D.A. also makes this assumption.) The \$715 per capita was obtained by (1) multiplying the 1941 figure of \$546 by the percentage increase in

<sup>4</sup> Livestock, Meats, and Wool Markets Statistics and Related Data, 1943 U.S.D.A., Washington, D. C.

<sup>5</sup> Graphical analysis was considered accurate enough for this purpose because of the high correlation between the variables used. Following are the formulas used in determining the first four series of Table II: (1)  $y = 1.8 + 1.2x$ , where  $x$  is the beef price received by farmers and  $y$  is the wholesale price of beef steers at Chicago. Both prices are \$s per hundred pounds. (2)  $y = .5 + x$ , where  $x$  is hog price received by farmers and  $y$  is the wholesale price of hogs at Chicago. Both prices are \$s per hundred pounds. (3)  $y = .5 + .87x$ , where  $x$  is the consumption of beef and veal and  $y$  is the consumption of beef. Both series are pounds per capita. (4)  $y = 2.6 + .8x$ , where  $x$  is consumption of pork and lard and  $y$  is consumption of pork. Both series are pounds per capita.

the U. S. Dept of Commerce total wage and salaries index from 1941 to 1943, (2) dividing by the percentage increase in the National Industrial Conference Board cost of living index from 1941 to 1943, and (3) dividing by the percentage increase in population from 1941 to 1950, assuming, as did the U.S.D.A., that the population in 1950 would be 144 million as compared to 132.8 million in 1941.

A comparison of the various 1950 estimates with the past figures given in Table II reveals that all the estimates are relatively high except the beef-pork price and consumption ratios, both of which are well within the range of these ratios for the 1921-1940 period.

### *Consistency of 1950 Estimates of Price and Consumption Ratios*

In the previous section it was shown that the beef-pork price and consumption ratios were reasonable in that they were within the range of such ratios during the period from 1921-1940. However, there is a question as to the consistency of these ratios with one another because they are not independent variables. If, for example, the beef-pork price ratio is relatively low, then the beef-pork consumption ratio will tend to be high to the extent that the consumer substitutes beef for pork. In his study,<sup>3</sup> the author has derived relationships based on 1900-1941 data which can be used to estimate consumption ratios consistent with given price ratios. These formulas are applied in the following discussion to check the consistency of the beef-pork price and consumption ratios based on the U.S.D.A. estimates. The three relationships used are:

- (1)  $\log X_0 = -.095 + .00526X_1 - .563 \log X_2$ .
- (2)  $\log X_0 = -.094 + .00512X_1 - (1.670 - .429 \log X_6) \log X_2$ .
- (3)  $\log X_0 = -.062 + .00430X_1 - .460 \log X_2 + .390 \log X_3$ .

In the above equations<sup>6</sup>  $X_0$  is the beef-pork consumption ratio.  $X_1$  is a linear time trend; the integer 0 corresponding to the year 1921 and the integer 29 corresponding to the year 1950.  $X_2$  is the beef-pork price ratio,  $X_6$  is real per capita income and  $X_3$  is the beef-pork consumption ratio of the previous year.

<sup>6</sup> These equations are based on 1921-1941 data. In the author's paper,<sup>3</sup> the regression coefficients of these equations are given in Table III on page 70, the coefficients of equation (1) being given in row 12, those of equation (2) in row 14 and those of equation (3) in row 7.

Table III gives beef-pork consumption ratios calculated by means of the above equations, using the beef-pork price ratio of 1.2 (based on U.S.D.A. estimates). Also the table compares the calculated consumption ratios with the consumption ratio based on the U.S.D.A. 1950 estimates. Since the first calculated consumption ratio in Table III was obtained by using equation (1), it takes into account only the price ratio, 1.2, and an upward linear trend in the consumption ratio. The second value, 1.04, calculated by using equation (2), is based not only on the price ratio and trend but also on income. In equation (2) the price ratio elasticity of the consumption ratio is considered a function of income. According to this equation when income is high, this elasticity is low, that is price does not influence consumption as much as when income is low. Thus, using the relatively high real income of \$715 in equation (2), the elasticity (coefficient of  $\log X_2$ ) becomes  $-.450$  as com-

TABLE III. A COMPARISON OF CALCULATED BEEF-PORK CONSUMPTION RATIOS WITH THE U.S.D.A. 1950 ESTIMATE

(1)	(2)	(3)	(4)	(5)
Equation used	Calculated consumption ratio	Consumption ratio based on U.S.D.A. estimates	Discrepancy (3) ÷ (2)	Discrepancy (in standard deviations)
(1)	1.01	.785	.777	-1.8
(2)	1.04	.785	.755	-2.2
(3)	1.10	.785	.714	-2.4

pared to  $-.563$  in equation (1). The last value in column (2) was obtained from equation (3) which takes into account the influence of price, trend and the consumption ratio of the previous year. The figure 1.10 was obtained by assuming that the consumption ratio of 1949 would be the same as in 1950. All the consumption ratios calculated as being consistent with the price ratio 1.2, based on U.S.D.A. estimates, are high as compared with the consumption ratio of .785 based on U.S.D.A. estimates. According to column (4) the biggest discrepancy shows the consumption ratio based on U.S.D.A. estimates to be 71.4% of the consumption ratio consistent with the assumed price ratio. Column (5) of Table III gives values based on a comparison of the discrepancies with the fluctuations in the consumption ratio during the 1921-1941 period.

These figures were obtained by taking the difference in the logarithms of the calculated consumption ratios and the ratio based on U.S.D.A. estimates and dividing this difference by the standard deviation of the logarithms of the consumption ratio in the 1921-1941 period.

### *Conclusions*

On the basis of the above analysis it would appear that the combination of the four beef and pork consumption and price estimates given by the U.S.D.A. is not a likely combination. If the U.S.D.A.'s estimates of the beef and pork prices became a reality then one would expect more beef to be consumed (in relation to pork) than the consumption based on U.S.D.A. estimates. It should be emphasized that the above analysis indicates merely that the combination of consumption and price estimates is an unreasonable combination. It does not indicate which individual estimate or estimates are out of line. In order to get this kind of information it would be necessary, and should be possible, to re-examine the procedure used in determining the individual estimates. The author believes that an analysis based on the relationships between relative quantities and prices (also other economic variables) is an effective way of checking on the reasonableness of a combination of estimates. This analysis considers a combination of four estimates. The same procedure could be applied to a larger set of estimates with the added possibility of converging on the most unrealistic estimate or estimates through a treatment of different combinations of related variables.

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## REVIEWS

*Agricultural Price Control*, Geoffrey S. Shepherd. Ames, Iowa: The Collegiate Press, Inc., 1945. Pp. vii, 361. \$3.75.

For over a decade and a half the federal government has been engaged in a series of large-scale experiments designed to control the prices of farm products. Prior to 1942 these experiments were directed exclusively at raising prices above the levels that would otherwise have prevailed in order to increase the incomes of farmers. Programs designed to keep prices of agricultural products down for the purpose of protecting consumers are a war phenomenon, and are likely to be abandoned as soon as the danger of post-war inflation is past, if not before. Thereafter any governmental controls of agricultural prices that are undertaken will again be directed at the establishment of price floors rather than at the fixing of price ceilings. In this book Professor Shepherd's main concern is with price supports. He explains the major price-supporting programs which have been undertaken in this country and appraises their effectiveness.

The book contains 29 chapters grouped under four headings: (1) stabilizing agricultural prices by controlling the market supplies of farm products; (2) stabilizing agricultural prices by controlling the demand for farm products; (3) local and regional programs for controlling market supply and demand; and (4) the problem of controlling agricultural prices after World War II.

In the final chapter Shepherd sets up eight propositions concerning agricultural price controls which he feels are warranted by his analysis of past experiments. The more important of these propositions are: (1) "storage programs, which merely put products into storage at one time and take them out at another, can stabilize prices but cannot raise their level over a period of years"; (2) "agricultural prices . . . can be raised or lowered over a period of years only by operations which control agricultural production, or the demand for farm products, or both"; (3) "efforts to raise agricultural prices by reducing agricultural production have not borne much fruit, and if they had succeeded, they would not have had much effect on farm income"; (4) "efforts to control agricultural prices by controlling the demand for agricultural products have borne some fruit"; and (5) "agricultural price

control is a dangerous tool, but probably it will continue to be employed."

Shepherd not only believes that government will continue to exercise substantial control over agricultural prices, but he also believes that government should do so, despite the dangers involved. He maintains that agricultural economists "would render better service to farmers by advising them how to control prices than by advising them to leave prices alone." A third alternative, not mentioned by Shepherd, would be for agricultural economists to develop methods of improving the operations of the competitive market for agricultural products.

The fundamental basis of Shepherd's contention that government should control agricultural prices is that "agricultural prices left to themselves are inherently unstable," and that this instability is "a major disturbing force in agriculture." Free market prices for agricultural products, he admits, work out all right in the long run. His complaint is that they work poorly in the short run; i.e., they are "unable to regulate agricultural production and consumption satisfactorily." The "fluctuations in prices . . . lead to uncertainty in farmers' plans for production, thus increasing costs and reducing production. They lead also to speculation in land during booms and severe hardships and disruptions during depressions."

The fluctuations in prices, as Shepherd points out, are caused both by changes in supply and by changes in demand. And these price fluctuations are intensified by the inability of farmers to adjust production promptly to changes in demand.

The principal device which Shepherd would use to stabilize prices against fluctuations in supply is government administered forward price floors. These price floors would be announced in advance of planting or breeding, and would be set at the level at which, in the judgment of the price-fixing authority, an average-weather crop would all move into consumption. However, only in the case of feed crops, such as corn, would the announced price floor be a firm one. On all other crops a schedule of price floors which varied inversely and proportionally with the actual outturn would be used.

In the section on "Stabilizing Agricultural Prices by Controlling the Demand for Farm Products" Shepherd discusses the various subsidy programs designed to increase consumption, such as the



school lunch program, the low-cost milk program and the food stamp plan. He correctly points out that "the fundamental way to stabilize prices against fluctuations in demand is to stabilize the demand," and that this "involves stabilizing the whole national and international economy." But if general stabilization cannot be attained, he argues that specific measures for subsidizing the demand of farm products are needed.

Marketing agreements for milk and for fruits and vegetables are analyzed in Part III. This section is based almost entirely upon the published work of others. It provides a good introduction to the subject.

In the final section Shepherd examines the problems likely to confront the government in carrying out the agricultural price commitment authorized by the Steagall amendment and related legislation. He visualizes that "agricultural prices are likely to decline severely" before the end of the commitment period. He does not hold out much hope that such declines can be prevented by measures designed to reduce the supply of farm products. He has more confidence in measures designed to increase demand, but these, he says, may prove to be very costly, and in addition may tend to perpetuate the over-expansion of production relative to normal peace time demands. He thinks that revisions of existing price-support legislation may be necessary, and he offers several suggestions.

Shepherd next raises questions concerning agricultural price policies after the transition period from war to peace. "Are parity prices . . . workable goals for agricultural price controls? . . . . If not, what objectives can be adopted in place of parity prices?" His answer to the first question is no. He would abandon parity prices, but not price controls. He would employ forward price floors for the purpose of getting farm products produced and moved into consumption in proper quantities, subsidized consumption programs for the purpose of assuring adequate nutrition, and direct payments to farmers in periods of depression for the purpose of supplementing their incomes. Also as a long run measure he would encourage the emigration of people from agriculture.

This book is a valuable contribution to the growing literature on government administered prices of agricultural products. Shepherd's descriptions of past control programs are concise and accurate, and his appraisals of their effects upon farm prices and returns are, I think, essentially correct.

One of the important aspects of agricultural price control which Shepherd does not cover at all adequately, however, is the effects of the various programs upon national income and employment. The Agricultural Adjustment Act of 1933 was conceived by its sponsors not only as a means of increasing farm prices and incomes, but also as a positive contribution to national recovery. It is not improbable that the "national income" argument will continue to be used as a justification for agricultural price controls. The inclusion of a careful objective analysis of this argument would have added significantly to the value of Shepherd's book.

My major disagreement with Shepherd's positive proposals relates to forward price floors. Space does not permit a detailed statement of my own views on this subject, nor is a book review the proper place to present them. Suffice it to say here that I feel Shepherd has exaggerated the advantages and minimized the disadvantages of forward price floors for agricultural products. They are not without merit, but for the time being I would view them simply as an intriguing hypothesis.

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*Land Tenure in the Colonies*, V. Liversage. Cambridge: The University Press, 1945. Pp. ix, 151. \$2.00.

The prospect is that agricultural economists in this country will in the future be giving increased attention to rural problems on an international scale. If so, it probably will be found that few questions are more widespread than those of land tenure and that these problems demand greater emphasis elsewhere in the world than they receive here. Mr. Liversage's new book, for example, is keynoted by the observation that "A close correlation will be found everywhere between contemporary social and political institutions and land tenures." "In all societies the relation between the people and the land they occupy and exploit is a matter of the greatest interest and moment." In expressing this point of view, Mr. Liversage (an agricultural economist in Kenya) stands on the same ground as Professor Ashby of Wales and other British Empire scholars who have noted the fundamental importance and universality of land tenure issues.

*Land Tenure in the Colonies* represents a quick glance at land tenure problems in various countries, constructed by a splicing of scattered comments and conclusions from the reports of many

investigators, and focused on tenure problems in colonial territories. Despite its breadth, however, the book is brief and modest: the author himself makes clear that he has made "No attempt . . . to produce a work of erudition."

If Mr. Liversage's book is not erudite, it is still valuable because of its sweep and its argument. In a work of this kind, there are bound to be some points which are insufficiently developed; American land economists will be puzzled, for example, by the weight given to reports of fragmentation in this country. On the other hand, there is much to be learned by watching Mr. Liversage spin the globe from Algeria to Zanzibar by way of Cyprus, Isle of Axholme, and Tanganyika on a single topic such as farm indebtedness in the short space of 24 pages. Also, those who have concentrated on the problems of one area gain by having an outside expert set those problems alongside information from a host of other countries. While the divergencies are noteworthy, it is the similarities which may startle the reader in this country.

The book is organized along an important line of reasoning. There are two broad tenure categories: customary and contractual. Tribal and feudal tenures are forms of customary tenure which is characteristic of primitive societies. There are five forms of contractual tenure: labor tenancy, share tenancy, cash tenancy, emphyteusis, and owner-occupation. Brief discussions of all these tenure forms comprise the first eight chapters of the volume.

In the next three chapters, Mr. Liversage shows that in colonial areas customary tenures are passing over to contractual tenures, and he gives the arguments advanced in favor of the transition to the freehold. He also points out, however, that the dangers in the new system inhere in the overcapitalization of land values and the fixation of a high debt structure upon a fluctuating income base. Mr. Liversage then reviews the subdivision, fragmentation, and farm indebtedness problems which have marred the record of freehold tenure, and he summarizes the weaknesses of owner-occupation and the remedies which have been tried (without much success) to overcome them.

The final chapters describe some land tenure experiments, under the title "Modern Policy." Finding unrestrained owner-occupation and tenancy both wanting, Mr. Liversage first looks for examples of restrictions on the rights of owners as occupiers or as landlords, and he cites instances in England and in parts of South Africa,

British Guiana, and India. Turning to usufructuary occupation without private ownership, Mr. Liversage uncovers numerous African examples; but he puts emphasis on the Kingolwira scheme in Tanganyika and (as Leake did in his tropical land tenure studies) on the Gezira scheme in the Anglo-Egyptian Sudan. He reveals the elements of weakness in these tenure experiments but concludes that they at least show that there is some possibility of finding a middle course between the "choice of evils": land nationalization vs. "individuality run riot."

This little book is timely and most welcome. Even the American agricultural economist who disavows interest in colonial problems should read this volume, if only to see what a colonial expert finds, or fails to find, in advanced land tenure systems that can be recommended to the millions of people who are standing on the threshold of modern civilization.

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*Big Democracy.* Paul H. Appleby. New York: Alfred A. Knopf, 1945, Pp. x, 198. \$2.75.

Like sin, everyone is against "bureaucracy." But Mr. Appleby—Assistant to Secretary Wallace 1933–40 and Under Secretary of Agriculture 1940–44—frankly and openly espouses the Devil's cause. The American people are strongly addicted to the belief that Rulers of the Queen's Navee are indeed made by "polishing up the handle of the big front door." To most, therefore, the first reaction to this book will be that Appleby, like the Lord Chancellor, is saying:

"The Law is the true embodiment  
Of everything that's excellent.  
It has no kind of fault or flaw,  
And I, my Lords, embody the Law."

Upon more careful and thoughtful reading, however, the reviewer must concede that Mr. Appleby's position is at least less partisan than the emotional anti-bureaucratic shibboleths and symbols to which we Americans are so accustomed. This book should be read in conjunction with the excellent companion-piece in the same Borzoi Book series, Roland Young's *This Is Congress*. While Appleby is less scholarly and critical than Young, both have a common ability to bring to the reader an insight which can come

only from intimate observation of, and personal participation in, the governmental process.

To Appleby, "bureaucracy" is the governmental *system*, which can be understood only "in terms of the public employees themselves, their conceptions of their positions, and the attitudes of the public about what is required in and from our civil servants" (p. 3). Government exists because certain people must be "charged with the function of promoting and protecting the public interest." As a result, its breadth of scope, public accountability and political character differentiate it from all other institutions (p. 6). Since we have big government and are going to have bigger government, we cannot simply throw in the sponge at its complexity. Rather, we must find means by which our increasingly specialized society may be synthesized, motivated in that spirit and using those techniques which are in harmony with our ideals of individual freedom (p. 27).

Much of Appleby's discussion emphasizes the view that a bureaucrat's "life is not a happy one." He belittles the dangers of arbitrary use of power by administrative officials, so bright is the light of publicity and so many the pressures and counterpressures to which they are continuously subject. "The average 'high official' is so conscious of the restraints and limitations under which he is obliged to function that his strongest impression is likely to be that of a very restricted power. Indeed, this sense of a lack of power is what drives people out of Washington" (p. 38). Except in the very limited doses necessary to capture the public imagination, the prima donna is out of place in a governmental system, which must produce "an organized product, an institutional product," not a personal and arbitrary one (p. 83). Redtape, though much maligned, is really the means of organizing the channels of the governmental process, thereby achieving "relative simplification" (p. 64) and consistency in applying general rules to particular cases (p. 32).

Appleby convincingly argues—contrary to recent Court decisions—that a department secretary "needs to give matters organizational attention rather than personal attention. He is responsible, and he should be responsible, chiefly for *the way in which such matters are handled* rather than for the handling of specific actions" (p. 71). Hence the necessity and wisdom of delegation of powers

if decisions are to stand close public scrutiny (p. 32). Because of the underlying stability of bureaucratic organization, policies, and programs, the influence of new Cabinet members is much more "mild and moderate" than the public generally believes (p. 106). This is the more true, the more the incoming secretary buries himself in detail and bucks the organized way of doing things. Operational problems should be largely delegated, since Cabinet members need above all to be "managerial, philosophical, political generalists" (p. 76), providing the broad policy stimuli by which bureaucratic organizations may be kept dynamic. The same principle applies, though in diminishing degree, as one descends the administrative hierarchy (pp. 65-77).

Throughout, Appleby compares big government and big business, invariably to the detriment of the latter. One may agree with him that the narrowly-focussed training and environment of most mature business men is apt to unfit them for broadly-oriented public service (pp. 3-6). Furthermore, private business does have its own bureaucracy, with many of the problems which public bureaucracy entails (pp. 59-61). As Gordon recently pointed out,

"the bureaucratic tendencies inherent in large-scale 'business' organization . . . impair management efficiency, . . . create inflexibility of operation and some resistance to change, and . . . increase the strain placed on the personal and leadership qualities of the chief executive. . . . Among some professional executives, scientific caution may degenerate into a tendency to play safe. They do not receive the profits which may result from taking a chance, while their position in the firm may be jeopardized in the event of serious loss."<sup>1</sup>

These shortcomings are strikingly similar to those which Appleby concedes as difficulties to be overcome in large-scale *governmental* organization (pp. 32-33, 104-105, 129-130, etc.). But these very similarities make his favorable comparisons of government *vis-à-vis* business as one-sided as the unfavorable comparisons which industrial interests (and the general public) are prone to make. Thus, he asserts that, because of political sentiments and pressures, "persons in government . . . reach out for authority somewhat more reluctantly than do executives in private business" (p. 84). And he considers it "not likely" that "a bureaucrat [will] be as

<sup>1</sup> Robert A. Gordon, *Business Leadership in the Large Corporation*, Brookings Institution, Washington, 1945, pp. 322-323 and 324.

much concerned for his interest as a bureaucrat as a businessman is concerned for his profit" (p. 31).

The reviewer remains skeptical. While the "sense of a lack of power" may drive some from Washington, it may challenge others—more adept and willing to play the "power game" for its own sake, without regard for the public interest—to stay. Certainly there have been important instances of this kind in the wartime deterioration of the administrative personnel and organization of the Department of Agriculture, which Appleby apparently feels is (or was) bureaucracy at its best. The problems of bureaucracy, whether public or private, are largely a function of size. Hence, the fact that, "in relation to the United States government even the largest corporation is small and simple" (p. 9), supports a fairly general presumption in favor of the greater efficiency of private enterprise, Appleby's objections notwithstanding (pp. 48-56). This is not to deny, however, that much of economic enterprise, to remain private, must harness that efficiency in the public interest more fully than it has as yet done.

The author's treatment of the important question of the relations between the executive and legislative branches (pp. 156-168) is disappointingly sketchy. The reviewer agrees that Congress needs to "treat its power more as an ultimate power and less as a devising and minutely, directly controlling power" (p. 168). But, so convinced is the author that our present bureaucracy is already fully accountable to the public, that he fails adequately to recognize (as do most bureaucrats) that Congress must be concerned with how its broad delegations of authority are used. Congressional hamstringing of administration results not only from the absence of appropriate machinery by which Congress may exercise continuous but constructive control of administration, but also from a tendency for administrators to stretch unconscionably the limits of their statutory authority more often than Appleby is willing to admit.

Every reader will find Appleby's discussion of still other subjects—for example, centralization and decentralization (pp. 84-104), the recruitment of personnel (pp. 113-115), and patronage (pp. 144-156)—penetrating and provocative. This book is "must" reading for many who dwell in the Harold-built marble halls and jerry-built "temporary" annexes of Washington. The "bureaucrats" of the nation's public colleges and universities will also find

much of interest and value in Appleby's personal insight into the Do's and Don'ts of public administration.

Whether we like it or not, it is clear that Bureaucracy is here to stay. Our first concern should, therefore, be to make it work better. This is Mr. Appleby's primary objective, and to that end he has made what is, on the whole, an acute and original contribution.

WILLIAM H. NICHOLLS

*University of Chicago*

*Latin America in the Future World*, George Soule, David Efron and Norman T. Ness. New York: Farrar & Rinehart, Inc., 1945. Pp. xiii, 372. \$3.50.

*Latin America in the Future World* is a very interesting document, interesting for two reasons: First, because of the information it contains, and, second, because of the thesis which it attempts to maintain and demonstrate. It compiles some information which the reader would find great difficulty in obtaining from other sources. Its thesis is that on the basic statement of the aims of the United Nations there "must be erected a structure which accords" with "the letter and spirit" of those aims; that "action is necessary" and this book attempts to present what that action should be. The authors state at the outset that:

"This book deliberately seeks out, not what is right but what is wrong, in order that what is wrong may be made right." (p. 3)

Part One, "The Basic Problem Described and Analyzed," covers the problems of "purchasing power," "nutrition," "housing and sanitation," "health," "geographic, cultural and land problems," "land ownership in selected countries," "social and political status of labor," and "the pattern of economic activity." Facts concerning each of these problems, in terms of comparative statistical data, are presented on all Latin American countries, wherever such data are available. Wherever quantitative and comparative data are not available descriptive materials concerning as many of the countries as possible are presented. These descriptive materials are necessarily spotted. In some cases their representativeness may be questioned. Because the purpose is to seek out what is wrong they are automatically unrepresentative in some ways.

Part Two, "War: Economic Dislocations and Programs," includes some things which are not necessarily a result of the war, such as improvements in food, health, housing, education and



social security programs, land reforms, etc. It gains in value by not being completely true to the thesis of pointing out sore spots but by presenting many of the constructive programs which are being carried on in these countries.

Part Three, "Recommended Policies and Implementation," is an exposition of economic doctrines, which might just as well be related to the economy of other nations as those of Latin America. Their essence is that the future depends upon an expanding economy—both production and consumption—throughout the world; that the western hemisphere is a part of the world and Latin America a part of the western hemisphere; and that "rapid and sound (postwar) recovery depends largely on the success of the United States and Great Britain in maintaining full employment and an expanding economy within their own boundaries." The application of these doctrines to Latin American countries and to relationships between them, the United States, and other countries, is made clear on such issues as tariffs, national self-sufficiency, and regional or continental self-sufficiency.

The relationship of the economic plans and policies stated in Part Three to the information and discussion of weak spots in Latin America, presented in Part One, are not made too clear. One is inclined to suspect that these two Parts were written by altogether different authors. Certainly they are on very different planes of scholarship and, furthermore, the discussion in Part Three deals more with potentialities than with weaknesses.

The final chapter, on "Proposed Institutional Arrangements," suggests "planning agencies of various sorts and at various levels"—local, regional, national and international; "Development Corporations," "Valley Authorities," "an International Labor Standards Agency," "Commodity Agreements," "an International Trade Corporation," and "Cooperation Among these Agencies." It does not wrestle with or even give consideration to the problem of creating an enlightened public opinion in Latin American countries as an essential prerequisite to the operation, or even establishment, of these many agencies. Maybe this is thought to be a different problem. I doubt it. It is that part of planning without which even the soundest of economic doctrine is utopian or even distasteful to those whose participation is required to guarantee that planning shall be translated into action.

CARL C. TAYLOR

*U. S. Dept. of Agriculture*

*Food Regulation and Compliance*, Volume I, Arthur D. Herrick, New York. Revere Publishing Company, 1944. Pp. xvi, 646. \$10.00.

Mr. Herrick's objective . . . "to present the legislation affecting foods and their marketing comprehensively and in such a manner as to enable the producer and distributor to understand and to apply these statutory requirements to his particular products" has been well met. Written primarily for producers and distributors, this comprehensive, well-annotated reference work provides a valuable description of present laws, interpretations and administrative rulings pertaining to the regulation of foods and food products.

The professional economist would welcome additional evaluation of food regulation in terms of reasons for it, its accomplishments in the past and the major issues and problems that have been raised as a result of new and revised laws. He will realize, however, that the author's principal purpose has been to prepare a manual on food regulation and how to comply. This he has done well. The book gives careful attention to every phase of the regulation of food products, and in language that is understandable to the trade it provides information on how to comply with requirements concerning acceptable labeling, packaging, advertising, distributing and purchasing of food products. In addition to meeting its basic purpose of providing the trade with a manual on food regulation, this volume should serve as a valuable reference book for all students of processing, marketing and distribution. It provides, in one volume, descriptions and numerous examples of compliance and violation for more than 30 statutes relating to meats, milk, fruits, tea, dairy products, containers, unfair competition, grade standards and foods in general.

The first chapter deals with early legislation in the field of food control. Numerous state and miscellaneous federal statutes preceded the entry of the Federal government into comprehensive control and regulation of foods with the passage of the *Federal Food and Drugs Act of 1906*. For 32 years this Act, with the seven amendments and 40 rules and regulations added during this period, . . . "served as the principal protection of the American people against adulteration and misbranding in such products."

The second chapter recounts the efforts and difficulties encountered by proponents of pure food and drug legislation in attempting to broaden and extend the scope of the Act of 1906.

The new . . . "*Federal Food, Drug and Cosmetic Act*, after a bitter legislative history, became the law on June 25, 1938." Although this Act . . . "represents a definite advance in the regulatory authority of the Food and Drug Administration, nevertheless, many provisions . . . of the *Federal Food and Drugs Act* may be recognized in the new law." Among the new provisions that were added were the prohibition of the production of food under insanitary conditions; the regulation of foods dangerous to health because of naturally contained poisons; the establishment of tolerances for poisons added unavoidably in food production; definitions of standards and identity, of quality and of fill of container; informative labeling; and the prohibition of slack filling of containers and use of deceptive containers. "Indeed it is not too much to say that the regulation imposed by the statute has radically transformed the entire marketing of food products."

"It will be noted that this work has been generally developed about the framework of the *Federal Food, Drug and Cosmetic Act* . . . the principal statute concerned with food regulation in the United States." "Other statutes, generally speaking, serve merely to complement its provisions."

Other important federal food statutes covered include the *Federal Meat Inspection Act* with its several extensions and amendments, the *Export Apple and Pear Act*, *Apple Standards Act*, *Federal Alcohol Administration Act*, *Import Milk Act*, *United States Grain Standards Act*, *Plant Quarantine Act*, *Livestock Quarantines*, *Twenty-eight Hour Law*, *United States Public Health Service*, *Federal Filled Milk Act*, *Special Tea Inspection Act*, *The Perishable Agricultural Commodities Act*, *United States Warehouse Act*, *Oleomargarine Statutes*, and *Adulterated, Renovated or Process Butter*, *The Federal Filled Cheese Act*, *The Federal Trade Commission Act*, *The Standard Barrel Act*, *The Standard Container Act of 1916*, *The Standard Container Act of 1928*, *State legislation* and the relation of the above to the *Food, Drug and Cosmetic Act*.

The remaining chapters deal primarily with an extension of the discussion of legislation as it affects producers, processors and distributors. Much detail and many illustrations are provided together with an attempt to delineate the principles upon which decisions are made. The remaining chapter headings indicate the form taken by this discussion: *Foods Subject to Regulation*, *Misbranded Food Products*, *Labels and Labeling*, *False and Misleading*

Representations, Food in Package Form, Name and Address of Sponsor, Net Contents of Package, Imitations and Fraudulent Products, Food Standards and Definitions, Food Grade Standards, Violation of Food Standards, Unstandardized Food Products, Common or Usual Name, Statement of Ingredients, Special Dietary Foods, Chemical Preservatives, Artificial Flavoring and Artificial Coloring, Label Display and Prominence, Deceptive Packaging of Foods and Labeling Exemptions.

MARK T. BUCHANAN

*State College of Washington*

*Fertilizers in the Postwar National Economy.* Washington: National Planning Association, Planning Pamphlet No. 42, 1945. Pp. 48. \$1.25.

*A Food and Nutrition Program for the Nation.* Washington: National Planning Association, Planning Pamphlet No. 46, 1945. Pp. 35. \$.25

"Fertilizers in the Postwar National Economy" is a report by the Agriculture Committee on National Policy of the National Planning Association. This Committee, of which Theodore W. Schultz is Chairman, is made up of a representative group of agricultural economists and leaders in industry and agriculture. The report concerns itself principally with a review of the relation of fertilizer to soil fertility and the national welfare. The report does nothing much more than bring together in summary form things that are common knowledge among persons familiar with the current problems of modern technical agriculture and its relation to the national economy. A review of the plant food content of United States soils reveals that they have highly variable requirements for Nitrogen, Phosphorus, and Potash and that, in general, Nitrogen and Phosphorus deficiencies are more pronounced than deficiencies in Potash. Fertilizers are effective in correcting deficiencies in soil fertility and in reducing soil erosion. The demand for fertilizer is closely related to farm income. It was estimated that with a postwar farm income of four billion dollars fertilizer expenditures would be 218 million dollars. Whereas, with a postwar income of eight billion dollars fertilizer expenditures would be 432 million dollars. Ample supplies of Nitrogen fertilizer appear to be in prospect from by-product sources and through continual development of scientific Ammonia and Nitrogen fixation

processes. There are abundant natural supplies of Phosphates in the United States, the United States having about one-half of the world's known deposits of Phosphate rock. Our indicated reserve would last more than two thousand years at our present rate of consumption. While American soils contain about fifteen times as much Potash as Nitrogen or Phosphoric acid, Potash deposits in United States are very small. Known reserves are less than two percent of the world's reserves and constitute about one-hundred years' supply at the current rate of production. The report recommends free trade in fertilizer and fertilizer constituents. The report recommends the importation of a substantial portion of our Potash requirements.

The report was obviously written by persons more familiar with the technology of fertilizer and with the fertilizer trade than with the economic problems involved. One of the most interesting features of the report is the numerous footnotes credited to the agricultural economists on the Committee. These footnotes, when taken together, amount to a minority report by the economists who participated.

"A Food and Nutrition Program for the Nation" is a joint report prepared by sub-committees of the Committees on Agriculture, Business, and Labor of the National Planning Association. This report reviews the problem of food and nutrition in connection with individual and national welfare in the United States and proposes a food nutrition program for the nation. To one who is unfamiliar with the technical problems of nutrition it appears to be not much more than a restatement of problems and issues which have been before the public in one form and another during the last decade. The report suggests that persons in the low income brackets find difficulty in providing themselves with ample supplies of healthy foods. Much of this failure, however, can be traced to ignorance rather than to lack of resources. Adequate data showing the actual extent of nutritional deficiencies appear to be lacking. The report takes the position that in a free country people should be free to eat what they want to eat but that it is a public responsibility to supply consumers with needed facts and to guard them against misinformation. The major part of the problem of nutrition in the United States appears from this report to be concerned with education and research. The report suggest that

this educational program can be carried out through consumer's education, particularly by the use of consumers' organizations, labor unions, farmers' organizations, medical societies, producers' organizations, and the extension service. It is a bit surprising to the reader to note that not much appeared to be expected from the public school system. It is suggested that both producers and distributors might well reorganize their business in such a way as to contribute to better nutrition. This would not appear to the reviewer to be a very practical suggestion except in so far as such recommendations might also contribute to the increased profits of the individual producers and distributors. In the opinion of the reviewer this report did little more than call attention to the desirability of developing a comprehensive program of education in this important field. The report would have been improved by the inclusion of material similar to that in the article by George J. Stigler, "The Cost of Subsistence," published in the May, 1945, issue of the JOURNAL OF FARM ECONOMICS.

E. C. YOUNG

*Purdue University*

*Price and Related Controls in the United States*, Seymour E. Harris.  
New York: McGraw-Hill Book Company, 1945. Pp. xx, 392.  
\$4.00.

This book is a description, analysis, and appraisal of the operations of the OPA.

The author is able to write about price control on the basis of first-hand experience. He was Director of the Office of Export-Import Price Control in 1942 and 1943. Several of the chapters in the book are based upon chapters which the author originally wrote for the OPA Manual of Price Control.

The author made a heroic attempt, with considerable success, to organize his inherently heterogeneous material into systematic form. The book is divided into seven parts: Introduction and Summary, General Aspects of Price Control, Techniques, Some Case Studies, Special Problems, Related Controls, and The Future of Price Controls.

The style is clear, the analysis is based upon well documented statistics and charts, and the appraisal appears to the reviewer to be sound. Students of price control will owe as much to Harris for

this report as they do to Frank M. Surface for his reports on food price control during World War I—perhaps more, for Harris' book is more analytical in character.

The author reaches several conclusions: Price control has worked remarkably well, as shown by comparing prices and production in World Wars I and II. This has saved the government and consumers much money. The cost of living during the first 53 months of World War I (July 1914 to December 1918) rose 64.6 percent, while during the first 53 months of World War II (August 1939 to January 1944) it rose only 25.9 percent. Yet industrial production more than doubled from 1939 to 1944, the last 40 percent of this rise occurring after comprehensive price control was instituted in the early part of 1942 (during World War I, production increased only 25 percent). Price control has not hurt business, for corporate profits before taxes rose from \$5 billion in 1939 to \$23 billion in 1943, while profits even after taxes rose from \$4 billion to \$9 billion. And finally, in the future the main objective must be to eliminate price control as soon as possible—that is, as soon as the demand and supply situation permits.

Books like Harris' are valuable complements to economic theory. Theory shows how our economy works; it thus indicates how, when necessary, the economy can be controlled. Harris' book is like a laboratory or factory report. It shows how the controls actually worked out, and how the problems of putting principles into practice were solved. Both theoretical and applied economists can benefit from study of books of this kind.

GEOFFREY SHEPHERD

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- Mears, Eliot Grinnell, *A Trade Agency for One World*. New York: Citizens Conference on International Economic Union, 1945. Pp. 64. \$.50.
- Nurkse, Ragnar, *Conditions of International Monetary Equilibrium*. Princeton University: International Finance Section, 1945. Pp. 24.
- Shepherd, Geoffrey S., *Agricultural Price Control*. Ames, Iowa: The Iowa State College Press, 1945. Pp. ix, 361. \$3.75.
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## NEWS NOTES

The election of officers for the 1945-46 year in the Western Farm Economics Association was completed in September. Dr. George W. Barr moves to the Past-Presidency, and Dr. Marion Clawson was elected to the Presidency. Dr. C. O. Youngstrom of Boise, Idaho was elected Vice-President. The newly elected officers take office October 1.

The staff of the Food Research Institute, Stanford, under grant of funds from the Committee for Economic Stability, is engaged upon an appraisal of the commodity-reserve currency proposal as advanced in Graham's *World Commodities and World Currencies*. The appraisal is to be completed by August 1946.

Martin A. Abrahamsen has accepted an appointment as Agricultural Economist and Professor of Agricultural Economics at North Carolina State College of Agriculture and Engineering effective October 1, 1945. Professor Abrahamsen will have charge of all work connected with marketing research and teaching.

Thurston M. Adams has been appointed chairman of the Department of Agricultural Economics at the University of Vermont.

L. J. Atkinson has transferred from the Division of Farm Management and Costs to take up work in the United States Department of Commerce on the Survey of Current Business.

R. W. Bartlett, who has been spending the greater part of his time during the past year with the Bartlett Foundation, a research agency working primarily in the field of milk marketing, will return to the University of Illinois on practically full time during the coming year. He will, however, continue to give some attention to the work of the Foundation.

Frank D. Barlow, Jr., Associate Professor and Associate Agricultural Economist in the Department of Agricultural Economics, Louisiana State University, was given military leave on August 14 for the purpose of entering the U. S. Army.

Merrill K. Bennett has been appointed dean of the School of Social Sciences at Stanford University. He will continue as Executive Director of the Food Research Institute.

Russell W. Bierman, Division of Farm Management and Costs, has begun his academic year as Littauer Fellow in the Graduate School of Public Administration at Harvard University.

Grant E. Blanch resigned position of Assistant Economist, Marketing, in the South Dakota Agricultural Experiment Station to accept position of Associate Professor in the Department of Farm Management, Oregon State College, appointment effective November 1, 1945.

J. Carroll Bottum, Assistant Chief in Agricultural Economics Extension at Purdue University, is on leave of absence for one year, ending June 30, 1946, to serve as economic advisor and analyst for the American Farm Bureau Federation in Chicago. In this position he is working with Dr. T. K. Cowden, also formerly of Purdue.

Karl Brandt, Economist and Professor of Agricultural Economics in the Food Research Institute, Stanford University, served the War Food Administration to June 1945, and subsequently the Foreign Economic Association, Office of Food Programs and The Food and Agriculture Division of the Enemy Branch, as a consultant.

Philip L. Breakiron, formerly Marketing Specialist, War Food Administration, has transferred to the Division of Marketing and Transportation Research, Bureau of Agricultural Economics, as Transportation Economist.

E. L. Burton, Agricultural Statistician of the Dominion Bureau of Statistics, has joined the staff of the Department of Farm Management at the University of Saskatchewan.

James P. Cavin, Associate Head, Division of Statistical and Historical Research, has returned to the Division after four months in Europe with the U. S. Strategic Bombing Survey.

A. H. Chambers, Assistant Agricultural Economist, Tennessee Agricultural Experiment Station, is spending six months in West Tennessee making a study of cotton marketing in cooperation with the Cotton Division, U. S. Department of Agriculture.

Walter P. Cotton has resigned as Economist for the National Grange to become Director of Economic Research for the Dairy Industry Committee.

H. H. Cutler of the Department of Agricultural Economics, Utah State Agricultural College, has been granted a leave for one year to assist the legislative tax study committee on a tax study for the State of Utah.

John C. Doneth in the Army Air Corps since May 1, 1942 recently received his release from the Military Forces and returned for service as Extension Specialist in Farm Management at the Michigan State College, September 17, 1945.

W. M. Drummond has resumed his former position as Head of the Department of Agricultural Economics, Ontario Agricultural College, after serving for some time as Economic Advisor to the Progressive-Conservative Organization.

A. C. Ellis, former Assistant Professor of Economics at Mississippi State College, was awarded Ph.D. degree in 1944 by University of Virginia, afterwards serving Associate Professor of Rural Economics at Hendrix College, has returned to Mississippi State College as Associate Professor of Economics in Research.

J. William Firor, Sr., who has been on leave for the past three years has returned to his former duties as Head, Department of Agricultural Economics and Rural Sociology, University of Georgia. Major Firor has been making some studies of rural industries for the Georgia State Board of Agricultural and Industrial Development since returning from two years' service with the Army Air Forces.

Delbert R. French, formerly Agricultural Economist, Division of Marketing and Transportation Research, has transferred to the Bureau of Reclamation, United States Department of Interior, as Public Works Economist.

Meyer A. Girshick, Agricultural Statistician, who has been on leave from the Division of Statistical and Research for sixteen months while working on war problems with the Statistical Research Group at Columbia University, is now back in the Division.

Noah Hadley joined the Purdue Agricultural Economics Extension Staff October 1 to assist with the Farm Organization and Farm Accounting activities of the department. For the past several years he has been County Agricultural Agent in Parke County, Indiana.

Lloyd C. Halvorson, formerly of the Economic and Credit Research Division of the Farm Credit Administration, has accepted the position of Economist with the National Grange at its headquarters in Washington, D. C.

H. W. Hannah has been promoted from Assistant Professor and Assistant Chief in Agricultural Economics to Associate Professor and Associate Chief at the University of Illinois. He plans to return from military service about October 1 and will give primary attention to the legal side of agricultural economics problems. As a Lt. Colonel, he saw active service in Europe as Operations Officer of the 101st Airborne Division. He has successfully recovered from serious wounds received in action.

Karl V. Hobson is now on the staff of the regional office at Portland, Oregon, engaged in a cooperative study with the Bonneville Power Administration of the potential production and utilization of agricultural products in the Pacific Northwest during the next ten years.

R. A. Kelly has been promoted from Associate in Fruit and Vegetable Marketing to Assistant Professor and Assistant Chief in Fruit and Vegetable Marketing at the University of Illinois.

Frank P. King, Associate Professor of Agricultural Economics, University of Georgia has been given leave of absence to do graduate study at Cornell University.

William Kling, formerly Agricultural Economist, Division of Marketing and Transportation Research, has transferred to the State Department.

H. K. Leckie of the Economics Division staff at Ottawa, and Statistician for the Canadian Meat Board throughout the duration of the war has resigned to accept a position as Associate Professor of Agricultural Economics, at the Ontario Agricultural College, Guelph. The staff at Guelph has also been enlarged by the addition of K. Kristjanson formerly of the Edmonton office, Dominion Economics Division.

James G. Maddox, Special Assistant to the Chief, returned to the Bureau after spending six months with the Office of War Mobilization and Reconversion, where he was special advisor to Deputy Director Hutson.

W. C. Mitchell has resigned as Director of Research of the National Bureau of Economic Research, after twenty-five years of service. Dr. Arthur F. Burns has been appointed as new director.

J. Lambert Molyneaux resigned his position as Economist in Rural Life, Division of Farm and Ranch Economics, Texas Agricultural Experiment Station, on August 15 to accept a position with the Division of Farm Population and Rural Welfare, Bureau of Agricultural Economics, Washington, D. C. He will be engaged in population research and assumed his new duties on September 1.

Harold S. Morine joined the Agricultural Economics Extension staff of Purdue University, September 1, to assist with the Farm Accounting Extension activity. Mr. Morine did his undergraduate work at the University of Illinois and obtained his Master's degree at Purdue University before entering defense work in 1942.

R. J. Mutti has been promoted from Associate in Marketing to Assistant Professor and Assistant Chief of Marketing. He is giving his primary attention to problems in connection with milk marketing and processing at the University of Illinois.

A. W. Peterson, Associate Agricultural Economist in the Division of Farm Management and Agricultural Economics at the State College of Washington, has been placed on the teaching staff for the current and succeeding school years. He has been given the additional title of Associate Professor.

F. J. Reiss has been promoted from Associate to Assistant Professor and Assistant Chief in Farm Management at the University of Illinois. He is giving his primary attention to summarization and analysis work in connection with the records compiled in the Farm Bureau Farm Management Service.

G. C. Retson, of the staff of the Economics Division, Department of Agriculture, Ottawa who has recently returned from the Canadian army has been granted leave of absence to assist with the rehabilitation program of National Selective Service.

Harold B. Rowe, who has been on leave of absence since September 1940, working first with the National Defense Advisory Commission, then with the O.P.A., then the Office of War Mobilization, and finally the Foreign Economic Administration returned in October to a permanent appointment on the research staff of the Brookings Institution. He will conduct researches on postwar food problems, national and international.

Adolph Scolnick, Agricultural Economist, who has been on military leave, has returned to the Division of Marketing and Transportation Research.

Orlin J. Scoville, Division of Farm Management and Costs, has begun an intensive study of the economic problems of operators of family size farms in the Great Plains States working out of the Bureau's regional office at Lincoln, Nebraska.

Carl Taeusch, Head of the Division of Program Study and Discussion, has joined the Department of Philosophy of the Armed Forces Institute School at Biarritz, France, where he expects to spend from seven months to a year. Alva H. Benton was to have acted in his stead, but the sudden necessity for taking extended sick leave made another interim appointment mandatory, and Peter H. DeVries, Head of the Division of Economic Information, has been made acting head of program study work for the time being.

J. L. Tennant, Head, Department of Agricultural Economics, Rhode Island State College, has been appointed chairman of the State Dairy Industry Reconversion Committee.

Alvin S. Tostlebe who has been with the research staff of the Division of Agricultural Finance from January 1944 to July 1945, has returned to the College of Wooster to resume his duties as head of the Department of Economics.

James D. Toy, Director of Research at the Farm Credit Administration of Louisville, returned to duty from military furlough on September 11.

O. Ulrey, Agricultural Economist at Michigan State College, is on leave for a year for work in the Office of the Chief, Bureau of Agricultural Economics.

George W. Westcott, Extension Professor at Massachusetts State College, is taking a year's leave of absence to study at Harvard University.

Holbrook Working has returned to the Food Research Institute, Stanford University, after an absence of two and a half years during which he was in charge of a program for extending the use of statistical methods of quality control in war industries for the Office of Production Research and Development, War Production Board.

1945 *Annual Meeting*  
of the  
**AMERICAN FARM  
ECONOMIC ASSOCIATION**

will be held at the

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Members of the American Farm Economic Association are requested to register at the Association's registration desk at the La Salle Hotel as soon as convenient after arrival.

Further information will be furnished by letter around December 1.

See preliminary announcement of the program, pages 1014-1016, this issue of the Journal.

PROGRAM OF ANNUAL MEETING—AMERICAN  
FARM ECONOMIC ASSOCIATION  
LA SALLE HOTEL, CHICAGO, ILLINOIS  
DECEMBER 27-28, 1945

*December 27*

10:00 A.M.

(Century Room)

1. Research developments in  
Farm finance—F. F. Hill, Cornell University  
Capital requirements for beginning farming—William L. Cavert,  
Farm Credit Administration, St. Paul, Minnesota  
Cooperative marketing—Harold Hedges, Farm Credit Adminis-  
tration, Washington, D. C.  
Sherman Johnson, U.S.D.A., Chairman  
Reviewer: W. G. Murray, Iowa State College

(Lincoln Room)

2. Research and educational programs in the marketing of  
Milk and dairy products—Alan McCleod, University of Con-  
necticut  
Livestock—C. D. Phillips, University of Kentucky  
Horticultural products—H. R. Wellman, University of Cali-  
fornia  
G. G. McBride, Ohio State University, Chairman  
Reviewer: G. W. Hedlund, Pennsylvania State College

(Press Gallery)

3. Postwar extension problems in agricultural economics  
W. B. Stout, U.S.D.A.  
G. W. Wescott, Massachusetts State College  
Carl Malone, Iowa State College  
O. G. Lloyd, Purdue University, Chairman  
Reviewer: J. E. Crosby, University of Missouri

2:00 P.M.

(Century Room)

- Postwar-agricultural policy—pressure vs. general welfare—O. B.  
Jesness, University of Minnesota  
Sixty million laborers and six million farmers—F. A. Pearson,  
Cornell University  
Economic patterns and postwar agriculture—T. W. Schultz, Uni-  
versity of Chicago  
E. J. Working, University of Illinois, Chairman  
Reviewer: H. R. Tolley, U.S.D.A.

5:00 P.M.

1. Editorial Council (Parlor C)
2. Farm Management Workers' Conference (Lincoln Room)
3. Executive Committee Meeting

8:00 P.M.

(Century Eoom)

1. Foreign agriculture and trade problems  
 Prospects for postwar agricultural exports—L. A. Wheeler,  
 U.S.D.A.  
 The United Nations Food and Agricultural Organization—Gove  
 Hambidge, Interim Committee of the Food and Agricultural  
 Organization  
 Educational opportunities and responsibilities in connection with  
 foreign agriculture—C. L. Stewart, University of Illinois  
 T. K. Cowden, American Farm Bureau Federation, Chair-  
 man  
 Reviewer: Asher Hobson, University of Wisconsin

(Lincoln Room)

2. Social Security for farm people  
 I. S. Falk, Social Security Board  
 K. H. Parsons, University of Wisconsin  
 W. P. Thomas, Utah State College  
 Eric Englund, U.S.D.A., Chairman  
 Reviewer: Norman Wall, U.S.D.A.

*December 28*

9:00 A.M. Business Session

10:00 A.M.

(Madison Room)

1. Parity concepts—Discussion of report of association committee  
 Karl Brandt, Stanford University, Chairman  
 R. J. Eggert, American Meat Institute  
 George Henning, Colorado State College  
 Fred Waugh, Office of War Mobilization and Reconversion  
 Karl Wright, Michigan State College  
 H. R. Wellman, University of California

(Illinois Room)

2. Postwar agricultural problems  
 In the great plains area—W. E. Grimes, Kansas State College  
 In the corn belt—W. E. Crickman, U.S.D.A.  
 In the dairy regions—L. C. Cunningham, Cornell University  
 D. Howard Doane, Doane Agricultural Service, Chairman  
 Reviewer: W. W. Wilcox, University of Wisconsin

2:00 P.M.

(Madison Room)

1. Patterns of adjustments in southern agriculture—Discussion on re-  
 port of association committee  
 Joseph Ackerman, Farm Foundation, Chairman  
 G. H. Aull, Clemson College  
 L. P. Gabbard, Texas Agricultural and Mechanical Col-  
 lege  
 B. M. Gile, Louisiana State University  
 James Hand, Jr., Rolling Fork, Mississippi



E. L. Langsford, U.S.D.A.

O. C. Stine, U.S.D.A.

Frank Welch, Mississippi State College

(Illinois Room)

2. Contributions from the work simplification committee

The field for farm work simplification—I. R. Bierly, Cornell University and E. C. Young, Purdue University

An analysis of work simplification and research methods and results—L. S. Hardin, Purdue University and R. M. Carter, University of Vermont

Extension use of farm work simplification—Roy E. Proctor, University of Kentucky

E. C. Young, Purdue University, Chairman

Reviewer: S. A. Eugene, University of Minnesota

7:00 P.M.

Dinner Meeting

(Century Room)

Presentation of \$100 award for best journal paper—Warren C. Waite, University of Minnesota, Editor, Journal of Farm Economics

The agricultural economist and public opinion—W. H. Jasspon, U.S.D.A.

Discussion: Arthur Moore, Editor, The Prairie Farmer

The highlights of the \$5,000 award paper—William H. Nicholls, University of Chicago

Discussion: L. H. Simerl, Illinois Agricultural Association

R. K. Froker, University of Wisconsin

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